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TABLE OF CONTENTS.

	PAGE.
Editorial:	
The Rubber Trade and the Tariff.....	73
A Case Wherein Experts Differ.....	73
A Visit to the Amazon Rubber Country.....	73
[Illustrated from Original Photographs.]	
Hand-Made vs. Machine-Made Hose.....	76
Expert Testimony in the Acid-Patent Suit.....	77
Do the Amazonian Rubber-Trees grow on Uplands?.....	78
Brief Abstracts of Recent Rubber Patents.....	79
India-Rubber Scrap (Illustrated).....	80
The Use of Rubber Hose in Horticulture.....	81
C. L. Allen	
An Early Rubber Shoe Combination (1852).....	82
Vulcanized Fiber as a Substitute for Hard Rubber.....	83
Rubber Notes from the Old World.....	85
The Pneumatic Tire in England.....	92
Underground Telegraph Cables in West Africa.....	93
New Goods and Specialties (Illustrated):	
A Cravenette Bicycle Suit.....	90
The Norfolk Mackintosh.....	90
A Pneumatic Corn-Plaster.....	90
The Richmond Pneumatic Saddle.....	90
The "Midget" Repair Outfit.....	90
"Ruby" Packing.....	90
A New Ventilated Boot.....	91
The Victor Resiliometer.....	91
"Sinew" Insulating Compound.....	91
Miscellaneous:	
A Rubber Company's New Home.....	74
Mexico's Declining Rubber Yield.....	74
End of a Rubber Crash.....	74
Random Notes from Pará.....	78
"Grão Pará"	
A Foreigner on Our Rubber Shoe-Trade.....	86
"Firsts" and "Seconds" in Rubbers.....	86
Statistical Brevities.....	86
A Use for Rubber in Saving Vessels.....	87
The Use of Rubber Belts in Mining.....	87
How Rubber Cement is Made.....	87
Utah Mineral Rubber.....	87
Rubber Goods and "Reciprocity".....	87
Rubber-Culture for Colombia.....	88
Germans in the Peruvian Rubber-Trade.....	88
Nicaraguan Rubber Production.....	88
A Well-Merited Promotion.....	92
New Publications.....	97
Trade and Personal Notes.....	94
Review of the Rubber Markets.....	97

THE RUBBER TRADE AND THE TARIFF.

THE fact that the Wilson bill still hangs fire and that there is more or less uncertainty regarding the future tariff on rubber goods has affected the rubber trade, although not in as marked a degree as it has some other lines of industry. The manufacturers of mechanical goods, footwear, and insulated wire are not at all worried. The clothing and sundries people are more or less fearful. But the uncertainty that has possessed the minds of buyers large and small has had its effect on all rubber-manufacturers, in whatever line they may be. The general verdict has been that it has resulted in smaller orders, and far more conservative purchases. In other words, the retailer refuses to stock up, and even big corporations like the railroad companies have been buying from hand to mouth. In spite of all this carefulness and economy on the part of consumer and retailer there have been but few failures and collections have grown steadily better. A prominent manufacturer said recently: "We have more small accounts than ever before in the history of our concern, and I am glad of it. The big orders are sweetest when the payment is prompt and sure, but the failure of a big buyer hurts, whereas a little failure one does not feel."

The general opinion is that stocks are so low and the needs of the country so large that, before the end of the summer, or at least early in the fall, the rubber-mills, big and little, will have all they want to do and more.

A CASE WHEREIN EXPERTS DIFFER.

THE advantages of machine-made rubber hose as compared with the hand-made article have been strongly urged for years by those companies who use machines. At the same time, those who employ the skilled workman instead of the machine are constantly asserting that for that very reason their product is superior. Whatever may be the process employed, or however strong may be the individual preference of any manufacturer, he will be interested to know the reason for the faith of the competitor who does not agree with him. A representative of THE INDIA RUBBER WORLD has therefore interviewed several of the leading manufacturers of rubber hose, and their opinions on this subject appear in another part of this paper.

In this connection it may be of interest to glance briefly at the rubber-hose trade as a whole. There are in the United States twenty-two concerns that manufacture rubber hose. Of these nine use hose-machines to a greater or less extent. It is but fair to them to state that they are among the most progressive of the hose-producers, and that the reputation that they have built up as makers of first-class goods cannot be impeached. Not that we would claim that all of those who do not use the machines lack in progressiveness or make poor goods. For example, no one would accuse the New Jersey Car Spring and Rubber Co. of lacking in enterprise, and their reputation for first-class hose is without blemish. Yet they will not have a hose-machine in their factory.

This state of affairs where different factories reach excellent and identical results by different methods is typical of the whole rubber business. In boots and shoes, clothing, insulated wire, and sundries, it has been shown over and over again that the different factories of necessity have an individuality of their own. Apparently identical results are reached by widely-separated processes. This is even more so in mechanical goods than in any other line of rubber manufacture, for the reason that the manufacturer in this line is familiar with a wider range of compounds and in the course of a few years will use in one way or another almost every kind of rubber that the world produces.

Speaking of hose in particular its excellence depends on the compound used in the tube, the friction in the plies, the fabric, and the cure. Further than this there are a score of little points of "finger-end" knowledge that help to make the perfect article. All of these are to be considered, and as they vary in different factories the problem is an intricate one. At the same time, it is exactly this condition of affairs and an acute appreciation of it that renders the successful rubber-manufacturer slow to make changes in compounds and processes, and especially cautious when it comes to imitating the process of another.

A RUBBER COMPANY'S HANDSOME HOME.

THE new home of the Peerless Rubber Manufacturing Co., at No. 16 Murray street, New York, is attracting the warmest admiration of the trade. The main floor is generous in its proportions, covering about 4000 square feet. It is finely lighted with large windows at front and rear, in addition to which are three large monitor top windows over the offices. The front is devoted to sample-boxes of the Peerless specialties, which are kept in a handsome oak cabinet extending from floor to ceiling, and fully forty feet long. Next to one of the windows in the front is space inclosed by a railing which is used as an open reception-room for customers. One-third of the main floor is reserved for offices for the treasurer and general-manager. An elaborate oak partition separates this from the main store. These offices are fitted with a long-distance telephone in an oaken booth, electric lights, oak desks for the officers and clerical force, and the walls are adorned with large photographs of their foreign agencies. In a quiet corner is a reception-room for customers who desire a confidential chat. The floor below should hardly be called a basement, for it is light, airy, and pleasant. Here is kept the stock of goods for filling "rush" orders. The whole place—store, offices, and basement—is fitted with quiet elegance, and with a regard for fitness and comfort that challenges admiration, and Colonel Winans has received no end of compliments from visitors in the trade.

Mr. Dale says that, while more and more of their goods have to be shipped from New York, yet altogether only about one-tenth of the company's orders are received and filled here. Nine-tenths go direct from the factory. A new departure has been made by the Peerless Rubber Manufacturing Co. They have gone into new lines of manufacture, notably the line of belting, which previously they did not make or carry. Now they are making a very fine grade of belting, having found a demand for such goods. Another thing to be noted is a new Peerless combination mat just put on the market by the company, but about this there will be something to say later.

MEXICO'S DECLINING RUBBER YIELD.

THE production of India-rubber in Mexico is shown by the figures given below, which have been compiled for THE INDIA RUBBER WORLD from the custom-house returns, by Señor Don Javier Stavoli, secretaria de hacienda y credito publico, at Mexico. In the column to the left is shown the amount of rubber exported during each of the past five fiscal years, showing a yearly average of 211,232 pounds. In the other column is shown the amount exported, during these five years, to each of the countries of destination:

YEARS.	Pounds.	EXPORTED TO—	Pounds.
In 1888-89.....	289,261	United States.....	837,457
In 1889-90.....	300,685	Germany.....	135,285
In 1890-91.....	202,951	Great Britain.....	67,912
In 1891-92.....	141,203	Colombia.....	9,643
In 1892-93.....	122,058	France.....	3,980
		Spain.....	1,881
Total.....	1,056,158		
Annual average.....	211,232	Total.....	1,056,158

The succeeding table, showing the values of the rubber exportation by fiscal years, indicates a heavy decline. From the files of THE INDIA RUBBER WORLD are gained the figures given for 1887-88, while the remaining figures come from Señor Stavoli:

YEARS.	Values.
In 1887-88.....	\$169,385
In 1888-89.....	124,547
In 1889-90.....	97,246
In 1890-91.....	72,559
In 1891-92.....	47,584
In 1892-93.....	51,829

These figures represent values in Mexican currency, as recorded at the custom-houses.

ECHO OF A RUBBER CRASH.

AT Trenton, N. J., on April 28, Vice-Chancellor Bird decided that certain mortgages, to the amount of \$471,647.95, made by the directors of the now defunct Star Rubber Co. in favor of themselves and three Trenton banks, and recorded at midnight on May 25, 1891, three days before the concern went into the receiver's hands, are valid to the extent to which the mortgages named were given to the directors of the company. The vice-chancellor holds that the directors had a right to such protection, they having been heavy indorsers for the company in the belief that it was in sound financial condition. The directors and banks, it is estimated, will realize about 75 per cent. upon their losses, but the mortgages cover nearly all the property of the company, and the general creditors will receive practically nothing. The vice-chancellor has decided, however, that the directors must make good \$78,000 paid in dividends between the years 1887 and 1890, when in fact nothing was being earned by the company. The directors were Jonathan Steward, John Moses, William I. Vannest, William C. Ivins, Alexander V. Manning, and Phillip P. Dunn. The last named is now dead, the failure of the company, due to the bad management of the company's manager, Thomas A. Bell (who was also his son-in-law), having ruined him.

A RECENT United States consular report from Batavia, Java, describes the exhibition of home and foreign art and industries which was closed in that city on November 19, showing rapid progress by Java in improvements and manufactories, railways, and electricity, and an increase in foreign trade. The government's botanic gardens made a fine display of rubber-plants.

A VISIT TO THE AMAZON RUBBER COUNTRY.

By Hermann Reimers.

IT was on the 3d of March, 1894, that I signed before the British consul at New York as purser of the good steamer *Marahense*, Captain Huyles (a very able and careful navigator, but otherwise a good and jolly fellow), for a voyage from New York to Pará and return. The wages were one shilling a month, to secure which I was obliged to deposit \$100. After a pleasant voyage of fourteen days, the quickest this boat has ever made, we landed in Pará. This city has been so often and so well described that it is as familiar to the rubber trade as if it were in the States, and I will give only a few of my own impressions concerning it. One thing in particular that struck me at once was the brotherly cordiality existing between all of the foreign residents. Pará is a very busy city when the steamers are in, and very quiet when they are not. The intense heat effectually keeps one from over-exertion. Everything there depends upon the rubber trade, and in a way that has been a curse to the country, because it has tempted the Paránese to neglect everything else. The country is wonderfully productive. Everything that the tropics produce can be grown here, but all of the enterprise that the country affords is concentrated upon rubber. As I before remarked, it is hot,—so hot that meat is cooked in the sun. To be sure, there is a half-hour thunder-shower every afternoon, but it serves to cool the air only a trifle. The city is well laid out and has many fine buildings. The streets are paved, and the houses painted a pure white. In the rainy season, however, all white paint turns black, so that a part of the year's "spring cleaning" is to paint one's house.

I saw in Pará the machine for smoking rubber invented by Senhor Coutinho and recently described in *THE INDIA*

RUBBER WORLD. It seems quite successful, and there is no reason why the rubber-gatherers cannot use it without difficulty. One point that occurred to me in connection with it was: supposing this machine were to come into general use, would there be any difference between "fine" and "medium" rubber? It would do away with cutting rubber as a means of grading it. Now, would it make the product all "fine," or all "medium"?

The climate took hold of me so much that I had to get rid of many of my usual garments, and when, one evening, I appeared before a friend clad in tall hat and pajamas, and barefooted, he complimented me on my taste in dress and then went into convulsions of laughter.

I found on inquiry that there were not a half-dozen people in Pará who had really seen rubber gathered, so I made up my mind to go to a camp and see it done. I was warned that it was a difficult undertaking and attended with danger as far as one's health was concerned, but I was down there to see it all, so we hired a steamboat, and, taking a row-boat along, started up the Guana river. Reaching the Arauaya river, the steamer could go no further, so we took to the row-boat. The foliage in its tropical luxuriance is magnificent. It is a paradise for flowers, reptiles, and insects. A single instance of this



MR. REIMERS TAPPING A RUBBER-TREE.

wonderful growth in plant-life may well typify the whole. The Easter lily, or its counterpart, grows wild on the banks, has a blossom as big as a sombrero, and a stem ten inches thick. Our first stop was at Cussumambába, where there is a factory for the manufacture of brandy from sugar-cane. Here we stopped for the night. We slept in hammocks,—that is, the rest slept, but there was such an intolerable smell of dried fish that I got but little rest. In addition to this a pig and a dog took up a position under

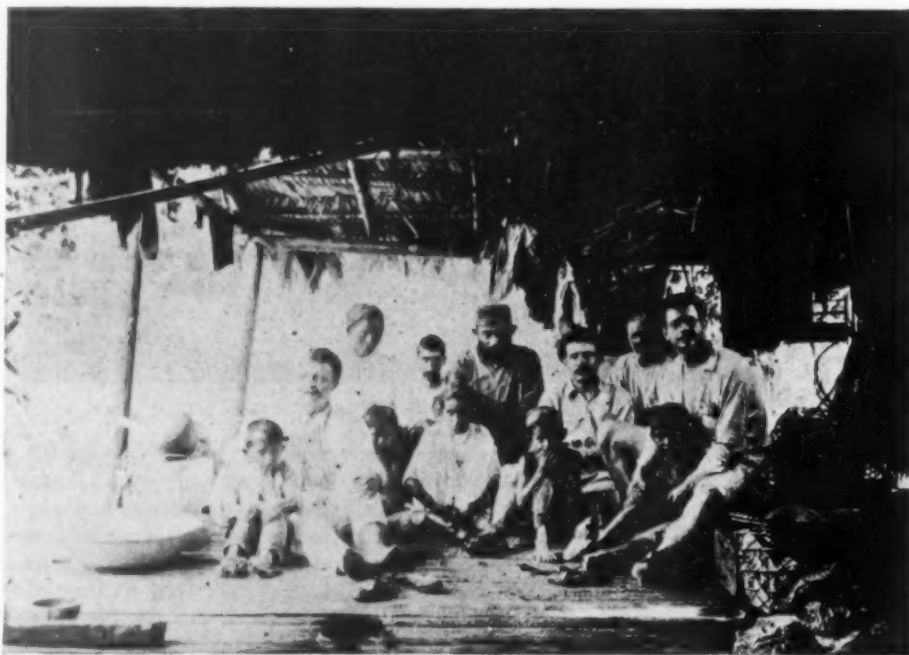


MR. REIMERS SMOKING THE RUBBER-SAP.

my hammock and would not be driven away. At 3 A.M., therefore, I turned out and went out upon the bank to wait for daylight. After breakfast, at 5, our food being canned goods chiefly, we entered a canoe and went further up the river, finally reaching a *seringal*. Here we made preparations to land. The landing consisted of a single log over which the water had run all night, leaving a fine coating of slime. On either side was eight feet of mud. I couldn't walk ashore, so I straddled the log and hitched along to *terra firma*, transferring most of the slime to my hitherto spotless pajamas. The *seringero* was off after rubber, but his wife and children were at home, the former running an American sewing-machine. While we were waiting the owner came back and we told him our errand. At first he was surly and suspicious, but the taste of some German beer, which tickled his

palate immensely, turned him into a friend and we started out for the rubber-trees. On the way my bare foot came in contact with a snake, and my jump was a record-breaker, so they tell me. I was allowed to tap a half-dozen trees, attach the cups, gather the milk, build the fire of nuts, and do the smoking. This last process was far from agreeable. The pungent smoke filled every part of the hut and my eyes ran with tears of sympathy, while the ants fed on my feet. At last, however, I had finished my stint and I got out into the clear

air again. Then we went back to the rubber-gatherers' hut, and, after much persuasion, got photographs of the owner and his promising family. Then, after a cordial invitation from our host to come again, we entered the canoe, and with our various curios and our unusual experience we returned to Pará.



MR. REIMERS (ON THE LEFT) SURROUNDED BY RUBBER-GATHERERS.

The next day we boarded the *Manauense*, bound up river to Manáos. The journey consumes eighty-seven hours and is full of interest. The steamer goes at full speed night and day, the pilots taking the course from huge trees on the banks. At times the boat runs so close to the banks that one could almost touch the leaves of the trees. The river is at all times full of floating trees, grass, and brush. So many trees are afloat that the saw-mills rely upon these for their year's supply of logs, and they are never short, either.

We made three stops for the mails at Obidos, Santarem, and Itacoatiara. The landing is made by running the steamer's nose right into the bank, which is so high that the landsmen can look down into the smokestacks.

The water of the Amazon is a dark brown, and when we struck the Rio Negro we knew it in a minute from the blackness of the water. We arrived at Manáos at 7 o'clock in the evening, and were immediately boarded by the chief of police. He was a Russian who spoke English very well and was the most important-looking personage I have ever met. As I was standing near the captain and was evidently a stranger, he at once began to pose.

"See this whistle?" he said; "I blow on it and fifty soldiers at once respond."

"Bet a hundred dollars one won't show up," I replied, but he wouldn't take me up.

Then I thought I would impress him, so I said: "I am the Duke of Cincinnati, and am down here to buy land. Is there any for sale?"

"What do you wish it for?" he asked, suspiciously.

"For the city of New York to use in building a promenade from the city to Staten Island."

Here the captain interrupted with, "For Heaven's sake, stop it! The steamer will be besieged to-morrow with land-sellers."

Things are quite primitive in Manáos, yet the city is building up rapidly and values have increased wonderfully in the last few years. The people are cordial and so honest that anything of value can be left anywhere and never be stolen. At the same time they can drive a sharp bargain, and frequently do it. My intention was to stop at a hotel, but while I was looking at my room the side of the house fell out, so I went to live with a private family where there were two boarders,—an Englishman and a German. We were very well treated, and the waiters, boys of thirteen and fifteen, who served the table with no clothes upon their shining bodies, gave us all the luxuries in the house. The first night I slept in a hammock and looked out at the stars through the crevices in the roof until a shower came up and then I was forced to raise an umbrella. As the hammock did not suit me, I asked for and obtained a bed. There was no mattress, so I lay on the wire netting with a towel for a pillow, and I still carry the basket-work impress of that bed. The morning "wash" was taken at a barrel some distance from the house.

The climate of Manáos is far healthier than that of Pará, and the surroundings are very beautiful. I saw a banyan tree that covered acres, and in the midst of it, far

above the ground, branches and soil had settled, and there was a waving field of grass occupying a plot that was fully 30x30 feet. The wealthy class import most of their food and drink from England or Germany, and the common drink for them is the red wine of Portugal. The horses here are small and wiry, and get the hardest sort of usage. They are able to do but little work, two cases of rubber being a load for them. A flourishing industry here is the sale of dried fish. This gathers dampness during the night and is spread on the sidewalks to dry during the forenoon. It is not in the way, however, for people, dogs, and all walk right over it, and it is apparently just as edible as ever.

We stayed seven days in Manáos and then, in spite of the advice of well-wishers, took a native Brazilian boat for Pará. This boat was once an elegantly-appointed steamer but now was dirty beyond expression. The only lights were candles. There was a bath-room but no water, and the party who had my stateroom previous to me had frescoed the walls with saliva most effectively. In addition to this the cockroaches were so numerous that it was no use to kill them, and the ants were always in evidence. The Brazilian captain was a very clever gentleman. His forefinger on the right hand was adorned with a nail fully three inches long and it was worth a trip to South America to see him spear olives with it. That future rubber tourists may be prepared for the food they would get on this line I append the bill of fare:

JANTAR (MENU).
Soupade de assos.
Ferjao mendos.
Estapudo.
Fritura de lagosta.
Fricando de Esvilha.
Roast bife.

Some of this food did not hit me just where I live, so I existed on eggs, crackers, and bananas. We had plenty of fresh meat. When the supply ran short they ran ashore, bought a bullock, hitched a rope around his horns, started up the donkey engine, towed him through the water to the steamer, hoisted him up as high as the crosstrees (here the engineer usually paused a few minutes to talk to a deck-hand while the poor creature dangled in the air), after which he was lowered to the deck and knocked on the head.

In spite of all these hardships, in due course of time we reached Pará and with my curios embarked for New York, glad again to be at home and at the same time grateful for the courtesy shown to me in the rubber country.

CONTRACTS have been awarded to the Gleason & Bailey Manufacturing Co. (Seneca Falls, N. Y.) for two large steel trucks and three hose-wagons for the fire-department of New York city, and for a patented steel-frame hook-and-ladder truck for Cortland, N. Y. They are building a handsome hose-wagon for Danville, N. Y., and have recently shipped a steel truck, complete with ladders and buckets, to East Randolph, N. Y. They have also received orders for a fourth hose-wagon for Mount Vernon, N. Y.; a steel-frame hook-and-ladder truck for St. Johnsbury, Vt.; and a hook-and-ladder truck for Garfield, N. J. The Gleason & Bailey Manufacturing Co. are exclusive manufacturers of the Bridgeport chemical fire-extinguishers.

HAND-MADE VS. MACHINE-MADE HOSE.

Interviews With the Trade.

MR. JAMES BENNETT FORSYTH, manufacturing agent of the Boston Belting Co., said: "Twenty-five years ago I invented and patented a machine for the manufacture of hose. This, I have no doubt, was the father of all hose-making machinery. I have carefully investigated the difference between hand-made and machine-made hose, and I unhesitatingly give my preference to the machine-made. We make all of our hose in that way. Of course hand-made hose may be good; it is, however impossible for a workman to roll down with a hand roller the covering and have no air in it. On the other hand, the hose that is run through a machine with a pressure of hundreds of pounds upon it has no chance to blister and will last much longer. If hand-made hose were better we should make it in that way, but many experiments have proven to me conclusively that workmen cannot compete with the machine."

Mr. Robert Cowen, Superintendent of the Boston Woven Hose and Rubber Co., said: "There is no comparison at all between machine-made and hand-made hose. By actual tests, hose that is made on machines will stand from 20 to 50 per cent. more pressure than that made by hand when the compounds and materials are exactly the same. These tests were made by me personally, because I wanted to know before we installed the hose machines whether our product would be better for their use. If you will watch the hose-maker at hand-work, you will notice that as he stretches the cover on with his left hand, holding down with his right, it is, spite of himself, stretched unevenly, and further than this however carefully he rolls, air will be in the inside cover, and will result in blisters and pin holes. Of course a hose machine must be made right to do the work effectively. With the friction cut on the bias there is a chance for air to appear where the piece is lapped. With the right kind of machine, however, this can be more effectively expelled than it can by the hand-roller."

Mr. L. K. McClymonds, general-manager of the New York Belting and Packing Co., Limited, said: "Unquestionably, hose made by properly-constructed machines is far superior to the hand-made article, as it is subjected to a greater and more uniform pressure than can be exerted by hand. This pressure is brought to bear in rolling on the duck, throughout the entire length of the hose (fifty feet) so that air is completely excluded, and the liability of blistering entirely removed, besides giving a more compact hose than it is possible to construct by hand. The methods of manufacturing hose at our factories at Sandy Hook and Passaic (under United States patents Nos. 441,754 and 440,703) are superior, the machinery better adapted for the purpose, and the facilities larger, without doubt, than in any other factories in the world. We can easily produce, at each factory, 25,000 feet in ten hours. Furthermore, every part of the hose-making,—the running of the seamless tube, the operation of putting the tube on

to the pole, the making, the wrapping, the unwrapping, every detail of the work,—is done by machinery, and the results are in consequence more uniform and the product more reliable and durable."

"Do you use machines for all kinds and qualities of hose, including the very best?"

"Yes. Our machines have been so improved from time to time until we consider them now almost perfect, and they admit of making all kinds and qualities of hose except a part of the process of manufacturing fire-hose and some other special kinds, where the tube is composed of two sheets of rubber, which is done by hand; but it is then put into the machine and the duck and cover is rolled on under a uniform and heavy pressure that it would be simply impossible to obtain by hand, and that bears on all points throughout the hose. This, as stated above, excludes air, thereby rendering blistering impossible, and secures a better adhesion of the plies of duck and the rubber, and gives a more solid, homogeneous article than could be secured by the most careful or skilled workman."

"Is it a fact, then, that you use machines instead of hand labor simply to secure a better quality of hose, instead of a cheaper product?"

"Hose machines were not introduced by us to secure cheapness, but to improve, as it unquestionably does, the workmanship."

"Can you sell machine-made hose cheaper than those who produce hand-made hose?"

"Oh no. We do not claim to effect a saving by the use of machinery. In fact, the labor cost of hose, as compared with other lines of goods, cuts but little figure. The chief element of cost is the stock,—rubber and cotton duck."

Mr. John J. Voorhees, treasurer of the New Jersey Car Spring and Rubber Co., said: "The manufacture of rubber hose is a very large item in our product, and we have for years been making a reputation for making good goods in this line. If we believed the hose-machine would make as good hose as can be made by an experienced hose maker, we would contract for a machine to-morrow, but we know better. The hose machine has the merit of turning out hose somewhat cheaper than good hand work, because the manufacturer can employ unskilled labor and boys, but we don't believe any one can honestly say the work is as well done. In this line the same difference exists between hand made and machine made hose as is found between hand made and machine made shoes; between a custom made suit of clothes and a ready made suit, or as in any line of work made, comparing the careful individual hand made product with the hastily made machine work. If the hose machine is 'just as good' why don't the manufacturers who use them employ them in making fire-hose, air-hose, steam hose and other classes of goods that require special care? I admit that some concerns have tried this to cheapen the product in these lines, but had to make

haste to get back to the old method. As you know, nearly all kinds of hose are made with the duck cut on the bias, and that involves a lap of the duck every few feet in a section of hose, and at these points the wall of the hose is thicker than the spaces between them. The rigid rolls of the hose machine rolls these joints very thoroughly, but fail to make a perfect impact of the plies of duck between

the laps. When a hose machine is employed in turning out a reasonably good line of goods a hose maker goes over the work with an awl and a roller to correct as far as possible the shortcomings of the machine. The hand-hose maker reaches every point; he is also able to carefully inspect his stock and detect imperfections in it, and this is impossible with machine work."

EXPERT TESTIMONY IN THE ACID PATENT SUIT.

THE testimony of James Bennett Forsyth in the infringement suit of the Chemical Rubber Co. vs. Goodyear's Metallic Rubber Shoe Co. and Emmett A. Saunders* (printed in our January issue) will be remembered as setting forth the fact that the acid process was used at the factory of the Boston Belting Co. years ago. In support of his statements several of the old workmen were called. An abstract of their testimony follows:

EDWARD DORSEY testified that he was sixty-seven years of age; that he had lived in Roxbury, Mass., for thirty-seven years; and that he worked for the Boston Belting Co. all of that time. He helped build the Clay-street mill, and after it was finished worked on a grinder. He knew Jeremiah Day (the man who attended to the acid work) and had worked with him. He said that Day washed old boots and shoes. He described the lead-lined tank and the wooden one, and testified that acid, water, and steam were used in the process. There was a lead pipe inside of the tank for conducting the steam. The tank was first filled one-quarter full of water. Old boots and shoes were then put in until the tank was two-thirds full. Then half a carboy of acid was turned in and the steam turned on. It was boiled from $1\frac{1}{2}$ to 2 hours. During the boiling the mixture was stirred constantly with wooden paddles. The rubber was then taken out and washed to remove the dirt and the fiber. He testified that the rubber was taken out with forks, and that the man who worked at it wore rubber apron, boots, and gloves. After the washing it was taken up to the pulling room and dried. It was then put into a "boiler" and heated and afterward mixed with new gum and vulcanized. They treated three charges a day. The tank was cleaned out each night and the residuum buried in the ground. They used more acid for old boots and shoes than for belting and packing scraps. He tried ground rubber thus recovered on a mixer, and there was no fiber present. At one time he got acid on his hands, and it burned them and stained them brown. Jeremiah Day worked at this all of the time, but the witness helped him only now and then. The tank was used four or five years. It was not used after 1863. In response to a question he told of a dog in the factory that got burned by the acid so badly that it had to be killed.

WILLIAM READY testified that he was sixty-six years

old; that he began work for the Boston Belting Co. about 1857; that he went to the war in 1862 and came back to work for the company in 1872. He worked on a grinder before the war, and was employed for a short time in the wash-room. He knew Jeremiah Day and was familiar with the work that he did in the factory. His testimony covered substantially the same ground as that of Edward Dorsey.

THOMAS JOYCE testified that he was sixty years old, and that he had worked for the company since 1850. He was watchman and took care of the fires at night. He knew Day. He testified that both Day and Dorsey worked in the "long shed." When the mill ran nights he often went to the shed and had a chat with Day. He used to go to the store-house and pick out some of the least damaged of the old boots and shoes to wear about the mill. He testified as to the tank, the water in it, the "stuff from a big bottle or jug," the boiling and the process substantially as Dorsey described it. He had examined the rubber after boiling to see if there was any fiber present, and there was none. When questioned regarding the "bottle or jug" he described it as a big glass bottle with a wooden box around it. He testified that the workers wore rubber aprons, gloves, and boots. He destroyed the tanks himself, took the lead out and carried the wood home for firewood.

MICHAEL LOOBY, junk-dealer, testified that he was employed by the company before the war. He had seen Jeremiah Day with something that looked like a spade in his hand moving old cut rubbers in the tank in the long shed. There was water in the tank and "some stuff" that came in carboys. His testimony was similar to Joyce's.

MICHAEL FLYNN testified that he was sixty-three years old, and that he began to work for the company in 1854 and worked for them for twelve years. He testified regarding the carboys, the cutting up of old boots and shoes, and the general acid process. He testified that most of the workmen in the factory knew of the process and its results.

HUGH McGRADY, sixty-eight years old, began to work for the company in 1854. He testified regarding the acid plant, the process and the workmen.

B. F. S. BULLARD, fifty-three years old, was the son of the chief engineer of the company. He testified that as a boy and young man, although not employed by the company, he had been accustomed to visit their works and had free access to all parts of the factory. He had seen the acid process, the old boots and shoes, etc.

* In THE INDIA RUBBER WORLD of October 15, 1893, will be found the particulars of the points at issue in this suit. Portions of the testimony taken have appeared in the issues of January 15, February 15, March 15, April 15, and May 15.—THE EDITOR.

DO THE AMAZONIAN RUBBER-TREES GROW ON UPLANDS?

By Courtenay DeKalb.

THE statement made on the authority of Mr. H. A. Wickham in THE INDIA RUBBER WORLD of April 15 last, to the purport that the natural *habitat* of the rubber-tree of the Amazon is upon high ground, and that its occurrence in the low alluvial basins is due to accidental migration, cannot pass without a challenge for more conclusive evidence than is there adduced. If true, it is a fact of the utmost importance, and would show that the available rubber-producing area has been greatly underestimated, and also that the future cultivation of this tree was not to be embarrassed by the unhealthfulness of tropical swamps. But is not all this too much to hope for?

At present the conditions considered as those established by nature for the growth of the Amazonian rubber-tree are a warm, steamy atmosphere, and a low situation in lands subject to annual inundation. To begin with, it is from such situations, and from such only, that rubber is actually gathered to-day in the valley of the Amazon. Mr. Wickham meets this in part by the assertion that travelers have jumped to the conclusion that these trees exist only in the lowlands, without having penetrated into the higher country. In this assumption Mr. Wickham is grossly in error. Both Von Martius and Pöppig spent many years in a study of the flora of the Amazon, in the course of which they penetrated regions, both in the high and low country, which the uninformed to-day rashly put down as "unexplored," and the verdict of these eminent botanists is that the two species *Hevea Brasiliensis* and *Hevea discolor*, which furnish almost the total output of Pará rubber, are found only in low alluvial situations. Professor H. W. Bates, who spent eleven years in scientific research in the basin of the Amazon, reaffirms this account of the habits of the rubber-tree in the most positive manner. The famous Crevaux, who, less than fifteen years ago, twice crossed the region between the Tumac-humac mountains and the Amazon, which even many otherwise well-informed residents of Pará and Manáos are fond of asserting is still "unexplored," is careful to mention when he first encountered the true rubber-tree in the low country only a few leagues north of the great river. Authorities might easily be multiplied. Every important tributary of the Amazon has been ascended by explorers far above the rapids that first stop steamboat navigation, and in accounts of the high country beyond these points, except where there are other local basins subject to inundation, there is no mention of the existence of *Hevea Brasiliensis* and *Hevea discolor*. It is a significant fact that rubber does not come from the Rio Negro, nor from any of the rivers draining the elevated region between the Amazon and the Orinoco. There is quite a large population on the plateau where the Rio Negro and the Orinoco are connected by the natural canal called the Cassiquiari, and these people build boats intended for sale at Manáos, load them with such marketable produce as their region affords, and shoot the rapids of the Negro, but rubber is never included in the cargoes they bring.

The indications are that Mr. Wickham himself has been led into error, and it is not improbable that it is a case of mistaken identity. There are ten distinct species of *Hevea*, found in Brazil, Venezuela, and the Guianas, only two of which produce an acceptable grade of rubber, but at least two of the valueless species resemble *Hevea discolor* so closely that it would require considerably more than a superficial examination to discrimi-

nate between them. The *Hevea lutea*, in particular, is a somewhat larger tree than its valuable congeners, and grows, as Mr. Wickham says, on high ground, being found all the way up the Rio Negro and across to Venezuela, and up the Amazon to the Andes. Its leaves are from an inch to two inches longer than those of *Hevea Brasiliensis* and *Hevea discolor*, and of a slightly darker hue, but otherwise it might easily be mistaken for them. It is also a copious yielder of rubber milk, but the gum it produces is inferior, containing too much moisture,—that is to say, the rubber emulsion in the sap is not so rich. The milk from this tree, however, is frequently used to adulterate that from the two species which are commercially valuable.

RANDOM NOTES FROM PARÁ.

TO THE EDITOR OF THE INDIA-RUBBER WORLD: Senhor Coutinho, the inventor of the rubber-curing machine described in THE INDIA-RUBBER WORLD for March, is attempting to secure a subvention from the government to enable him to go to the United States to arrange for its manufacture.

Mr. F. W. Dunbar, who is here in the place of Mr. W. B. Norton, during the latter's enforced vacation in search of renewed health, is accompanied by his wife, who has become very much liked in the foreign element in Pará society. They are Bostonese, and Mrs. Dunbar is a graduate of a Boston school.

Considerable shipments of rubber from Peru are reported from time to time. The steamer *Spero*, lately arrived from Iquitos, carried 180,400 pounds of rubber in transit for Europe. The *Princesa Isabel* has since arrived with nearly 308,000 pounds of Peruvian rubber and cacao, which are offered for sale here.

Dr. V. Chermont Miranda has published a book, in Portuguese, on the important island of Marajó. There has lately been a meeting of the land-owners of this island for the purpose of organizing a syndicate for the improvement of conditions there. It is their intention to introduce better breeds of cattle and sheep (which buyers of meat in Pará will applaud), to study the drainage of the portions of the island, and to improve the channels of the rivers Arary, Tartarugas, Cururu, and Cambú.

The receipts of rubber at Manáos during March were as follows, by rivers contributing the supply:

Purus.....	334,459 kilograms.
Juruá.....	150,389 "
Madeira.....	142,815 "
Solimões.....	97,582 "
Javary.....	70,954 "
Negro.....	8,594 "
Amazon.....	296 "
Total.....	805,089 "

There was an amusing incident last night at the theater, where I went to see "Gioconda." It illustrates how wide everything is kept open in this climate for the sake of ventilation. During the most affecting scene,—just before the heroine kills herself,—a cat in a great state of wrath, with hair all on end, ran across the stage, energetically pursued by a dog! The scene outside the theater was a beautiful one, reminding me of a theater I have seen in Madrid, with the lights among the green trees of the theater park and the brilliantly-lighted little cafés near by.

GRAO PARÁ.

Pará, Brazil, May 2, 1894.

BRIEF ABSTRACTS OF RECENT RUBBER PATENTS.

AMONG recent patents issued by the United States Patent Office, embodying applications of India-rubber or Gutta-percha to a greater or less extent, have been the following. It is not practicable here to do more than to note the use of rubber in each case, with sufficient detail to enable those who are interested to decide whether or not to look into any particular patent more fully:

TIRES.

No. 518,229.—Pneumatic Tire for Wheels. Thomas A. Egan, Jersey City, N.J.

An outside tire for wheels consisting of an endless belt suitably secured to the wheel rim and having hooks and eyes uniting the edges thereof.

No. 518,601.—Bicycle-Tire. Edgar Grauert, New York city.

A bicycle tire composed of a continuous air tight tube, an outer tread surface of leather or rubber, and an intermediate strip or layer of flexible non-stretchable material, the edges of which are formed into pockets provided with elastic cords or bands located therein.

No. 518,849.—Pneumatic Tire. Joseph G. Moony, Erie, Pa.

In a pneumatic tire, the combination with the casing thereof; of an air tube formed of material composed in part of an elastic substance, such as rubber, and in part of a raw cotton fiber, the general direction of which is longitudinal of the tube, said tube expanding against, and being limited by, said casing.

No. 518,850.—Pneumatic Tire. Joseph G. Moony, Erie, Pa.

In a pneumatic tire the combination with the rim of the wheel having an annular groove therein; of the tire having an outwardly turned flap which has an annular rib on its under side which fits into the groove in the inner surface of the rim, and also an annular rib on its upper side and a flanged binder that is strained circumferentially on said flap upon said upper rib.

No. 519,185.—Device for Fixing Pneumatic Tires to Wheel-Rims. Emile J. Vauzelle, Paris, France.

In means for fixing pneumatic tires to the rims of wheels, the combination of the air chamber, an air-valve, an enclosing envelope having thickened edges, wires inserted in the thickened edges of the envelope and provided with loops, with tension wires also inclosed in the thickened edges of the envelope, the said tension wires being passed through the loops and attached to and adapted to be moved by the air valve.

No. 519,177.—Wheel-Tire. Harry M. Devoe, New York city.

An elastic tire formed of an elastic tube, a cloth covering applied on the inner surface thereof, an endless, coiled wire spring located in the tube with its coils in essential continuous contact with the said cloth covering, and one or more pairs of elastic tie wires which are interwoven with the coils of the spring passing alternately over and under adjacent convolutions or coils of the spring and being twisted together intermediately thereof.

No. 519,438.—Bicycle-Tire. John J. C. Smith, Passaic, N. J.

The method of making a bicycle tire consisting in forming a core of paraffine, wax or equivalent material, laying thereon a coating of rubber, covering the same with segmental metallic strips which nearly but not quite surround the tire in cross section, lay thereover an exterior coating of rubber and removing the core and vulcanizing.

MECHANICAL GOODS.

No. 518,560.—Lawn-Sprinkler. Stephen S. Black, Pasadena, Cal.

In a sprinkling apparatus the combination with a spraying device of an elbow shaped standard having lugs projecting

from its vertical portion and suitably curved legs adapted to form a horizontally movable joint on said lugs whereby the feet may be extended radially or swung around parallel with the horizontal portion of the standard.

No. 518,805.—Hose-Leak Stop or Jacket. James B. Cooper, Minneapolis, Minn., assignor of one-fourth to Charles M. Way, same place.

The combination with the metal jacket composed of the hinged parts arranged to be locked about a hose or pipe, and considerably larger than the same, of the two-parts flexible lining for said jacket, said lining being somewhat larger than the jacket, whereby the longitudinal edges of the lining are pressed together upon closing the jacket, and said lining provided with the acute-angled inwardly-flared flexible flanges or lips to engage a pipe or hose.

No. 519,312.—Adjustable Hose-Coupling Band. Evan E. Arthur, Portage, Wis.

A hose band made in two separable parts, one part being formed at one end with an underlapping tongue of the full width of the overlapping part of the band and having an external longitudinal rib or projection, and the other overlapping part being formed with an internal longitudinal groove or recess to receive said rib or projection.

BOOTS AND SHOES.

No. 519,579.—Boot or Shoe. Samuel Annenberg and Erasmus Stahl, Naugatuck, Conn.

A boot or shoe formed of rubber or other suitable material and consisting of an upper and a lining, the two stitched or suitably united together, forming between the upper and lining a circular compartment around the ankle portion of the boot, a series of compartments connected with and extending from the circular compartment to the sole of the boot, a supply tube connected with and extending from the circular compartment to the top of the boot and provided with a covering, the whole arranged to permit of the boot being inflated with air or suitable heat-retaining liquid.

No. 519,596.—Die for Cutting Soles. Robert R. Gibbs, Utica, N. Y.

A cutting die comprising a longitudinally sectional body, side cutters mounted upon said sections, heel and toe cutters mounted upon and over-lapping the said cutters, and means to adjust the body sections laterally.

No. 519,656.—Overshoe Attachment. Arthur J. Barber, Sodus, N. Y., assignor of two-thirds to Ellera J. Whittleton and Martin V. Teetor, same place.

The device for retaining a shoe on the foot consisting of the spring wire having a part secured to the top of the heel portion of the shoe and connected by a bead or coil with another part normally standing at an angle of about forty-five degrees to that part and adapted to embrace the foot or inner shoe near the upper part of the heel portion thereof, and eyelets situated at the junction of said parts near the top of the heel portion of the overshoe and secured therein.

MISCELLANEOUS.

No. 518,658.—Artificial Leg. William Andrews, Lowell, Mass.

The combination, in an artificial foot, of the core, a layer of hard rubber next the core and an outer elastic covering.

No. 518,863.—Combination Rubber and Steel Horseshoe. Elmer C. Scribner, Neversink, N. Y.

A horseshoe comprising in combination a metallic base portion made up of two or more sections pivoted together with two free ends tapering as described, a rubber shoe vulcanized to the lower or calked surface of the metallic portion, apertures in the rubber portion for the reception of the calks, nail holes which register with holes in the metallic portions, rubber cor-

rugations as shown, the said compound shoe being capable of adjustment to hoofs of different sizes.

No. 519,561.—Elastic Storm-Apron for Vehicles. William M. Blanchard, Quincy, Ill., assignor to the Quincy Storm Apron Company, same place.

A storm apron consisting of water-proof material terminating in a hood, said hood being gathered on each side with a wide heading, and secured by elastic strips arranged within the hood to the sides thereof, being adapted to fit dash-boards of varying widths and heights.

TRADE-MARKS.

No. 24,658.—All articles of Hard and Soft Rubber. The Mechanical Rubber Co., New York city. Filed March 16, 1894.

Essential feature, the figure and letters "2 X L." Used since July 1, 1883.

No. 24,659.—All Articles of Hard and Soft Rubber. The Mechanical Rubber Co., New York city. Filed March 16, 1894.

Essential feature, the word "Buckeye." Used since July 1, 1893.

DESIGNS.

No. 23,234.—Boot. Benjamin Nathan, New York city. Filed December 12, 1893. Serial No. 493,507. Term of patent 14 years.

PATENTS EXPIRED.

No. 189,610.—Machinery for Manufacturing Water-Tight Hose. Robert Cowan, Cambridgeport, Mass. (Filed September 7, 1876.)

The process of coating the inside of a woven or knit tube of cylindrical or other shape of cotton or other textile fiber, by

first drawing a gummy tube into the tube, then inserting a heated incompressible body therein, while applying external pressure, and subsequently vulcanizing the same.

No. 189,629.—Adjustable Elastic Buckets for Chain-Pumps. T. Kenyon, Hamilton, 't hio. (Filed March 12, 1877.)

Brief.—The cone and lines have screwthreads cut upon them, by means of which the packing can be expanded and contracted to fit the tube and take up the wear of the packing.

No. 189,691.—Nursing-Bottles. Julius Briere, Alençon, France. (Filed October 26, 1876.)

Brief.—The air enters the bottle by an enlarged tube opening in the cork, which leads into a passage closed at its bottom by a rubber disk, with an opening eccentric to the central aperture of the valve tube.

No. 190,192.—Inkstands. H. H. Burrington, Providence, R. I. (Filed February 15, 1877.)

The rubber ring fitted into the desk and projecting above the mouth of the inkwell.

No. 190,244.—Urinals for Invalids. Richard H. Olmstead, Napa City, Cal. (Filed October 21, 1876.)

A hard rubber or rigid elongated urinal, provided with an inwardly-inclined flange and discharged-opening.

No. 190,538.—Mouth-Pieces for Musical Instruments. Charles G. Conn, Elkhart, Ind. (Filed March 22, 1877.)

A mouth-piece for musical instruments, constructed with a rim of rubber or other vulcanizable gum secured within a recess or recesses in the face.

INDIA-RUBBER SCRAP.

THE TIRE INDUSTRY IN INDIANA.—In a late issue *The Wheel* (New York) devotes a page to the manufacture of bicycles by three concerns at Indianapolis, one of which is the Indiana Bicycle Co. The tires for the latter are manufactured by the Indianapolis Rubber Co., at the rate of 125 sets per day. "The G. and J. tire patents are adhered to, but the tires are made in a different way from those made by Gormully & Jeffery. The flap is placed on the inner side of the tire and the company claim that this is original with them. They make the smooth-surfaced tire almost exclusively. The company are using a loose fabric which is claimed to be new. The threads run parallel and are joined together with a light thread, which will break when the tire has been used, and, it is claimed, leave the tire made with the Palmer principles. The company have patented the method of molding the tires." The rubber company named was incorporated December 5, 1892, with \$25,000 capital. Its president, H. E. Galloway, is also the vice-president and manager of the Indiana Bicycle Co., whose output this season is expected to reach 12,000 wheels. *The Wheel* gives a picture of a scene in the tire-factory.

* * *

RECENT references in print to Balata as a newly-discovered "rival of rubber" prompt our London contemporary to remark that this gum was experimented with as long ago as 1859 by the India-Rubber, Gutta-Percha, and Telegraph-Works Co. (Limited) at Silvertown, since which time an important trade has been developed.

* * *

FROM the government customs returns of British Guiana for 1893 it appears that the imports of Balata to the United States were 199,278 pounds, valued at \$238,080, or 12 cents per pound. From figures already published in *THE INDIA RUBBER WORLD*, this probably amounted to half the total output for the colony.

THE advertisement of a land company in a Mexican newspaper which has reached us contains this item:

"We have for sale a concession for the planting of 15,000,000 of India-rubber trees. The federal government pays a bonus of three cents per tree and the state government one cent per tree, for the encouragement of this branch of agriculture. The concessionaire provides some 50,000 acres of valuable land, suitable for this purpose, and will accept payment in stock for the land and concession. No subsidy has yet been drawn. There are 150,000 trees planted and many more in the nursery."

* * *

BULGARIA imported in 1892 rubber goods from England and Germany valued as follows: hard rubber, 1611 francs; elastic threads, 17,865 francs; rubber shoes, 86,411 francs; other goods 6005 francs; total, 111,892 francs.



AN AMERICAN MILK ADDER.

"By the great Allah! This serpent is most difficult to charm!"

—*Scribner's Magazine.*

THE USE OF RUBBER HOSE IN HORTICULTURE.

By C. L. Allen, Floral Park, L. I.*

BUT few persons, other than manufacturers and dealers in rubber hose, have the slightest idea of its value to the world of horticulture. Like all other familiar objects, we pass it by unnoticed, unless perchance an accidental leakage may excite our curiosity. We doubt if the manufacturers themselves know or even think how much the world has profited by their industry. They know it must be useful or it would not be used, but its intrinsic worth is little appreciated. If a person wants to learn something about hose from an economical standpoint, let him sit for half an hour with the florist of forty years ago, when the man with a half-dozen greenhouses, 9×100 feet each, was regarded a giant horticulturist, and listen to him as he relates his experience.

Then, as now, labor was the principal cost of production, and any method that would economize that was hailed with joy. At that period the main cost of the plant's production was for the labor employed in watering. This was all done with the watering-pot, and of this important article there were all shapes and sizes, some flat, some round, some large, others small; some were made of copper, others of tin, with quite an array of nozzles for each. The water used was furnished from cisterns, running crossways through the center of each house. The common custom was to stoop down and dip up a can of water, which had to be carried through the houses and used as wanted. This was not only a slow but a very laborious practice, particularly when the houses were wide, which necessitated raised benches, and the water had to be all carried by hand to the highest point.

By the aid of rubber hose, with a reservoir overhead, as is now the almost universal method, the cost of watering is not one-tenth of what it was before its introduction. For the production of vegetables out of season, there are now several establishments in our country with ranges of greenhouses of from one to ten acres each. Without the aid of hose these establishments could not have been maintained, because the cost of labor in watering alone would more than doubled the cost of production, which would have rendered the business unprofitable, as but a limited number would have indulged in these luxuries at so great a cost.

Nor is this all; the hand syringe was formerly of equal importance with the watering-pot, and of these there were many kinds for various purposes. These were principally employed to destroy the red spider, the florists' most formidable enemy, and for which there was no other means of destruction but water, and this was a specific. But its application had to be constant; to keep down the red spider the greenhouses were syringed daily, and in hot weather two or three times each day. In a large range of greenhouses this was the work of one man and he had time for

little else. The cost of this work was a heavy item of expense. A first-class syringe cost, when the writer was in the business, fourteen dollars, and they were constantly getting out of order. Their place in commercial horticulture is now historical, as the syringe is now only used in the application of insecticides, the hose having taken its place in the destruction of insects in the greenhouse, and its work far more effective. Besides that, it is done without cost; when the watering is done through the hose the plants receive a heavy shower, as though they are being grown in the field or garden. Since the introduction of hose into the greenhouse the red spider has nearly dropped out of existence, and is no longer a dreaded enemy.

The hose fills an important place on the lawn and in the garden. Those who have watched the development of horticulture in the city and its suburbs can easily see that it is to the hose that the greatest improvements are due. With its aid the few square feet of ground in both the front and rear of the house have been converted into beautiful little gardens or grass-plats. For many years our own little city garden, 20×40 feet, was the admiration of all beholders, and justly so, because no plants ever grew or flowered more freely, and never was grass more luxuriant than in our little garden. Water, freely given, counteracted the extreme heat, and the growth of vegetation was simply astounding. The hose kept the grass wet by day, and the flower-borders wet by night, thus making the "wilderness blossom as the rose."

In the wider fields of horticulture, the orchard, the hose plays a still more important part. It has conveyed the arsenites to the apple-trees and effectually destroyed the codling-moth, the cause of all our wormy apples. But a few years ago, in the most favored apple districts of our country, it was a rare thing to find an apple without a worm; it is now quite as rare to find an apple with one. Without the hose this could not be successfully applied. It also conducts the Bordeaux mixture to the potato-vines that show signs of blight (*Pronospora investans*), and they are saved. At the same time it carries the arsenites that destroy the potato-bug. Where the hose is used the apple scab is no longer seen, and blight on the grape-vine disappears forever.

The hose, too, carries death to the army worm that destroys our orchards, and to the measure worm that attacks the elms that so gracefully adorn our roadsides.

Rubber hose in horticulture has indirectly been of immense value to the manufacturer. To use the hose profitably, a strong force of water is necessary; to secure this nearly every florist in the country, where water is not introduced, has erected a windmill, and had his tank placed where it will afford sufficient pressure to accomplish the desired purpose. This, too, proves a two-fold benefit: while the florist has all the water he wants for his greenhouses, his hose makes him in a measure independent of

* Our contributor is one of the most eminent horticulturists in the United States and also a member of the editorial staff of the *American Agriculturist* (New York).—THE EDITOR.

the fire-department. It is safe to say there are now ten times more windmills in use than there would have been had it not been for the hose-manufacturers.

The force-pump manufacturers are reaping a good harvest because of "the rubber hose in horticulture." The florist, with one or two houses, must have his hose, and

cannot afford the windmill. In its stead he uses the force-pump, which requires the labor of another man, which of itself shows how much there can be saved by its use where there is a constant supply of water. Thus it can be readily seen how much the horticulturists have been benefited by the hose, and also its benefit to other allied industries.

AN EARLY RUBBER-SHOE COMBINATION.

*Prices and Lines for 1852.**

THE undersigned manufacturers of India-rubber shoes and boots would announce to their customers that they have determined it to be for their own mutual benefit, as well as for the interests of purchasers and dealers in the articles manufactured by them, that their business should be conducted according to some uniform and established system, and subject to some general rules understood and agreed upon among themselves.

They have therefore established the following rules and regulations which, by mutual covenants with heavy penalties, they have bound themselves to observe in the transaction of their business:

1. *Prices of Goods.* The following prices for boots and shoes are hereby established as the minimum prices below which no one of the parties shall, so long as this agreement continues in force, sell or dispose of any of the several kinds of shoes or other articles herein mentioned and described, subject, however, to such discounts and other qualifications as are mentioned below, that is to say: The minimum prices for first quality of boots and shoes shall be as follows:

	Per Pair.
Men's shoes of all kinds.....	\$1.00
Men's footholds.....	.75
Ladies' shoes of all kinds.....	.75
Ladies' gaiters of all kinds.....	1.00
Ladies' Jenny Lind buskins.....	.75
Ladies' Jenny Lind boots.....	1.00
Ladies' Long Boots, felt-lined.....	2.75
Ladies' long boots, net-lined.....	2.00
Misses' and children's shoes.....	.50
Misses' and children's gaiter boots.....	.75
Misses' and children's long boots, felt-lined.....	1.75
Misses' and children's long boots, net-lined.....	1.62½
Boy's shoes, size 6 and under.....	.75
Men's short boots, 16 inches.....	4.00
Men's long boots above 16 inches.....	4.50
Men's top boots.....	5.00

(A special deduction of 3 per cent. was allowed on goods on hand having the old style of rough bottom.)

2. *Discounts, Credit, Etc.* No discount shall be made, directly or indirectly by any of the parties hereto, or their agents, to any customer or firm the total amount of whose purchases, in any one season, shall be less than \$1000. To each customer or firm, whose purchases in any one season shall amount to \$1000 and upwards but shall be less than \$2000, no discount shall be allowed exceeding 10 per centum on the foregoing prices. To each customer or firm, whose purchases in any one

season shall amount to \$2000, but shall be less than \$3000, no discount shall be allowed exceeding 15 per centum on the foregoing prices. To each customer or firm whose purchases in any one season shall amount to \$3000 or upwards, no discount shall be allowed exceeding 17 per centum on the foregoing prices. But any individual or firm purchasing of any two or more of the parties hereto, or their agents, in any one season may be allowed the same rate of discount on each of his or their bills to which he or they would be entitled, if all his or their purchases had been made of one of the parties hereto. No credit shall be allowed on sales exceeding six months from the time of delivery. If cash is paid within 30 days from the time of delivery, a further discount not exceeding 6 per centum on the net amount of the bill may be allowed, and if payment shall be made after the expiration of 30 days from the time of delivery, a discount may be made not exceeding the rate of 1 per cent. a month on the unexpired term of the credit. For all purposes of this article all shoes sold and delivered for the home market, including the Canadas and British provinces between the tenth day of June inclusive and the first day of September of any year shall be taken and deemed to be delivered as of the first day of September and if paid for prior to September, in addition to the discount of 6 per centum above authorized, a further discount may be allowed not exceeding the rate of 1 per cent. a month for the time prior to September 1.

3. *Agencies.* No one of the parties hereto shall keep any boots or shoes for sale, or on consignment in any place whatsoever, with any person or persons, except with regular agents. And each of the parties hereto, who shall appoint an agent or agents, shall give notice of every such appointment to each of the other parties hereto. Neither of the parties hereto shall establish or maintain an agency in the Canadas or the British Provinces, nor more than one agency in New England, nor more than one in the states of New York and New Jersey,—which may be located in either of these states; nor more than one in the state of Pennsylvania which shall be located in Philadelphia, nor more than one in the states south of Pennsylvania and the Ohio river, which shall be located in the city of Baltimore; nor more than one in the Western states; and each such agency in the city of Baltimore shall cease and be discontinued by the first of December next. Agencies in the western states to cease March 1, 1853, and as much earlier as sales of goods on hand December 1 shall be closed.

* This document, reprinted from the *Boot and Shoe Recorder*, is given here as a step toward making THE INDIA-RUBBER WORLD files a complete repository of the history of all branches of the rubber trade. It may prove of interest at this time through comparison with current features in the rubber-shoe business.—THE EDITOR.

Sales may be made by the several parties hereto, at their respective manufactories, of boots and shoes manufactured by them. All traveling agents shall be discontinued by each and every one of the parties hereto.

4. *Freight.* No freight shall be paid or allowed except from the manufactory to the cities of New York, Boston, Philadelphia and Baltimore, only as goods sold before the first day of December next.

5. *Barter Prohibited.* No one of the parties hereto, nor any agent of any or either of the parties hereto, shall barter or exchange boots or shoes for India-rubber or stock used in the manufacture of boots and shoes, or for any other description of property whatsoever, nor

make any bargain or contract with reference to such barter or exchange; but each and every one of the parties hereto, and their respective agents, shall sell and dispose of boots and shoes only for cash, notes or bills of exchange, and on terms in every respect in accordance with the foregoing provisions.

HAYWARD RUBBER CO.
GOODYEAR'S METALLIC RUBBER SHOE CO.
LEVERETTE CANDEE.
HARTSHORN & CO.
NEWARK INDIA RUBBER MFG. CO.
NEW BRUNSWICK RUBBER CO.
FORD & CO.

VULCANIZED FIBER AS A SUBSTITUTE FOR HARD RUBBER.

OPINIONS as to the relative merits of hard rubber, on one hand, and of vulcanized fiber and other similar substances, on the other hand, have been gained from leading firms by a representative of THE INDIA RUBBER WORLD.

William Courtenay, president and general-manager of the Vulcanized Fibre Co., No. 14 Dey street, New York, reviewed the situation as follows:

"In discussing the so called controversy between vulcanized-fiber manufacturers and hard-rubber manufacturers, it is important to remember, first of all, that the two substances come into direct competition with each other only in a few of the numerous and various applications to which they are severally adapted. There are branches where rubber is admittedly not only superior, but indispensable, and vulcanized fiber does not attempt to invade that domain. For instance, vulcanized fiber cannot be molded into shapes like rubber, and hence we do not compete with hard-rubber handles, except in a limited way. Vulcanized fiber must be shaped mechanically from sheets or tubes. Again, it is only good in dry places, and hence hard rubber has an unquestioned advantage over it in all places where there is moisture. On the other hand, let me enumerate some of the various uses to which vulcanized fiber is put, and to which rubber is an entire stranger. Gibs for engine cross-heads, brake shoes, friction clutches, roving cans, condenser-ferrules, trunk materials, rollers of every description, and innumerable other mechanical uses offer no field for hard rubber, while vulcanized fiber competes there with brass, steel, rawhide, and other substances. We come, then, to those branches where rubber and vulcanized fiber clash. In electrical insulation, vulcanized fiber seriously competes with rubber. It is used in dynamos for commutators, magnet-heads, etc., for switchboards and switch plugs, wall-insulators, bases of telegraph and electrical instruments, lighting appliances, fire and burglar-alarms, etc. Another important field where the two compete is that of valves. Vulcanized fiber valves are now in use on over a thousand ocean steamers where they generally (though not invariably) give complete satisfaction. Another application where there is competition is in all classes of plumbers' joint packing.

"Now what are the advantages of vulcanized fiber over hard rubber in these applications? In the first place, it does not deteriorate with age, as rubber does, but improves with it; hence there is obvious economy in using it. Again, owing to its remarkable toughness and strength, which admits of its being forced into all sorts of positions without breaking, it can be tapped, drilled, screw-threaded. It is not brittle, is not fractured by a fall or blow, and is not affected by oil or grease of any sort. It is uninjured by hot or cold water and insoluble in any of the ordinary solvents. It is not inflammable and does not melt under any circumstances.

"Of course there is, in addition, the advantage of cheapness. Not only is a pound of vulcanized fiber much cheaper than one of hard rubber, but in valves, for instance, only about one-fourth the thickness of rubber is required, so that there is a double saving. But of course cheapness is only an advantage when everything else is at least equal between the two, and this question comes up next. How tests have shown that a valve of vulcanized fiber will do four times the work of rubber. After four years of continuous service on an ocean steamer our valves are as good as new. When the valve becomes hard after use, immersion in water restores its original flexibility. It swells when wet, but resumes its original size when dried. To show how tough and strong vulcanized fiber is, it is sufficient to say that it will stand a direct compressive strain of 25 tons to the square inch without the least injury. There have been even more remarkable tests made.

"Our company was started in 1873, with the patents of a German inventor, A. T. Schmidt, as the foundation. The original patents have all expired, but the trade is firmly established, and the use of vulcanized fiber has steadily grown. We do a large business abroad, in England, the colonies, and on the continent. What we claim for it, in brief, is that it is practically a new material of great strength, durability, and elasticity. The fact that it is cheaper than rubber is not an argument against it, but in its favor, since it gives results equally, and in many cases more, satisfactory. But we never encourage our customers to use it under conditions where it is not certain of success.

We do not recommend it, for instance, as a packing for steam-joints, for it is liable to char and become brittle."

It may be stated that vulcanized fiber is produced by treating specially-prepared vegetable fiber with powerful chemical agents, whereby the exterior portion of each fiber becomes glutinous, and, while in this condition, the whole mass is consolidated under very heavy pressure and becomes homogeneous. After this the chemicals are extracted, and the mass is rolled, pressed, and cured, the result being vulcanized fiber. Costly machinery is required for these processes, and great skill. The factory of the Vulcanized Fibre Co. is in Wilmington, Del., and they make only one quality of vulcanized fiber. Unlike rubber, no adulteration is possible in vulcanized fiber. There are inferior goods in the market, but their inferiority is easily perceived when tested.

Mr. F. Achelis, president of the India Rubber Comb Co., expressed himself as follows on the subject: "Vulcanized fiber and the other substitutes for hard rubber, if they are preferred at all, are preferred solely and simply on account of their low price. For insulating purposes, nothing can compare with rubber, and, if other things were equal, hard rubber would be exclusively used. But it is true that in many cases the substitutes are used because they are tolerably satisfactory, especially in dry places, and so much less expensive. It is true that it is possible to make certain grades of hard rubber at prices not far above those paid for vulcanized fiber, but we never recommend customers to buy them. We will sell such grades, but without assuming responsibility for good results and with emphatic warning. We generally ask people for what purpose they intend to buy hard rubber, and, if it is for insulating purposes, only the best quality is recommended. Vulcanized fiber is afraid of moisture, and even the perfectly dry places are apt to be damp under foreseen or unforeseen circumstances. It is perfectly safe to say that people would buy rubber if the price were as low as that of fiber. As to the claim with reference to valves for pumps, the truth is that fiber does not compete then with good hard rubber at all, but with inferior mixtures into which the cheap grades of rubber enter largely. The cost precludes the wide use of the best hard rubber for pumps, although of course they are manufactured and sold to considerable extent."

The electrician of the India Rubber Comb Co., Mr. Campbell, expressed views similar to those of Mr. Achelis, but added that in no way can vulcanized fiber, fibrone, fibroid, etc., be called a rival or a competitor of hard rubber. Neither in point of quality nor in point of price do they compete. Rubber is indisputably superior, and fiber does not injure it at all. The man who cannot afford to buy a gold watch buys, perhaps, a silver watch, but silver is not a rival of gold. The hard rubber business has steadily grown, and no inroads have been made upon it by the alleged substitutes. Last year was the most prosperous year in the hard rubber trade. Now, owing to dull times and stoppage of mills and factories, the demand is less, but it is not due to the competition of fiber.

Mr. E. W. Belcher, secretary and treasurer of the Butler Hard Rubber Co., said: "With regard to electrical insula-

tion, I cannot speak positively, but, judging from the fact that fiber is certainly extensively used in electrical industries, its insulating qualities must be good. I would only take exception to the claim that, in this respect, fiber is *superior* to rubber. It is not, for people prefer rubber, and are deterred from using it only by its high price. For fine and delicate electrical machinery hard rubber is used, and of the highest quality. But in switchboards, dynamos, etc., fiber has doubtless displaced hard rubber to a large extent owing to its cheapness. It must be admitted that fiber is tougher than hard rubber, and that, generally speaking, it is a good article, well adapted to numerous uses. But it is not true that hard rubber cannot be tapped, drilled, or screw-threaded. On the whole, in the limited field where the two articles compete, there is no doubt that, if the price of rubber were to be lowered greatly, the demand for fiber would cease. Just consider the fact that you can buy a pound of fiber for from 40 to 45 cents a pound while we have to pay 65 or 70 cents for the crude rubber. That is what gives fiber its opportunity. It does not have to be as good as rubber, but reasonably satisfactory in order that people should buy it. The same is true of valves. They are not made of the best quality of hard rubber, and fiber doubtless can compete with the valves made of cheap grades of soft rubber. Flexibility is a doubtful advantage, however, in valves. On the whole, I should say that the hard-rubber trade must have been indirectly injured by the growing use of fiber in the electrical industries, for it is obvious that, had there been no fiber, hard rubber would have been used. It is true that we have never felt any direct injury. The development of the electrical industries has been so rapid that the demand for our goods has been steadily increasing, but it is safe to say that more would have been sold if fiber had not shared the business with us to some extent. The electrical companies buy thousands of pounds of hard rubber of us, and they also buy large quantities of fiber, using the latter in places that are never damp or on ordinary machinery. Where there is the slightest danger of moisture, and in the finer machinery, only rubber is used."

Mr. S. Y. l'Hommedieu, of the Columbia Rubber Works, said: "There is no doubt that in many branches vulcanized fiber has to some extent displaced rubber. It serves the purpose as well as hard rubber, and is so much cheaper. The claims made for its toughness and durability are probably well-founded. I have seen samples of fiber tubing, and certainly must admit that it will do the work of hard rubber. Wherever fiber can take the place of hard rubber its low price will confer advantage upon it, to the injury of the rubber trade. But the claims made for the adaptability of fiber to the various uses of the electrical industry are yet to be substantiated. Though fiber is not a new article, but has been used for numerous purposes (where rubber did not enter at all) for the last ten years at least, it is relatively new in the electrical industry. There it is an experiment, and we manufacturers and dealers can say nothing yet about the results obtained. The electrical people are giving fiber a trial, and, after a time, they will make their conclusions known by their acts.

At present things are so quiet in the electrical industries that nothing can be inferred from the small demand for hard rubber coming from that quarter. My own impression is that nothing can equal hard rubber as an insulator. Then, fiber cannot be molded into all kinds of desirable and fine shapes; you have to take it as it comes. It

absorbs water, swells, and loses its original shape or form. It is not certain to work in a given way. On the whole, there would seem to be no great future for it in electrical work, but it has an immense field outside of that, and in many ways the material has of course already displaced rubber."

RUBBER NOTES FROM THE OLD WORLD.

IN Bantzer, according to the Dresden *Gummi-Zeitung*, a war has broken out between two rubber-shoe concerns that threatens to give the public at large a very unfavorable opinion of the rubber-shoe industry and create distrust in the value of that commodity. One of the dealers having, in a certain number of the *Bantzeren Nachrichten*, offered to the public large quantities of rubber shoes at very low prices, his rival declared in the next issue that the goods were burned and worthless, which would not last eight days and for which 50 pfennigs a pair were charged at the factory. Thereupon the first dealer became very angry and retorted in the following issue that the charge of his rival was the result of competitive jealousy and envy, as well as his own want of business ability. And so the charges and counter-charges continued, getting more and more virulent and reckless. When dealers thus expose each other as sellers of burned or worthless goods, the entire rubber-shoe trade unjustly pays the penalty for this illegitimate competition.

* * *

A CONVENTION has been concluded among the German rubber-manufacturers which will result in raising the prices of rubber balls, unduly forced down by severe competition.

* * *

Now that the Russo-German commercial treaty has been finally entered into, there is expected to be a revival of the cable trade with Russia. Of late the trade has ceased altogether. Whatever conducting and insulating materials Russia has required, have been supplied chiefly by Austria, and to some extent by Switzerland and England. This cessation of a profitable trade was the result of the tariff-war between Russia and Germany. After regular duties go into effect things must change, especially when the fact is taken into consideration that in Russia they are just beginning to concern themselves with the electro-technical industries. It is but natural that Germany should become the principal source of supply for Russia for this trade, not because of geographical advantages, but because it is admitted that Germany is in advance of all other countries in this branch of industry.

* * *

HOOPER'S Telegraph and India-Rubber Works, Limited, is the style of a new company, registered in London on April 16, with \$250,000 capital, to take over the business now being carried on by the trustees of the late William Hooper at Millwall. The business is that of manufacturing India-rubber telegraph cable and general India-rubber goods, and extending the same for the supply of electric light, telephone, and other cables. The company, being free from the disadvantages of working under the supervision of the court, are now in a position to compete on equal terms with other manufacturers. The managing directors will be John B. Hooper and Basil Gee. The offices are at 31, Lombard street, E. C., London.

* * *

THE Eastern Extension, Australasia, and China Telegraph

Co., Limited, report that the laying of the first section of their alternative cable between Singapore and Hongkong—namely, between Singapore and Labuan—is now open for traffic. In addition to affording direct telegraphic communication with Labuan, this line practically brings British North Borneo into telegraphic communication with the rest of the world. The effect can hardly be otherwise than to give a stimulus to the already growing exports of India-rubber and Gutta-percha from that part of the world. The tariff from Great Britain to Labuan is 6/5 per word.

* * *

THE plan to exploit the immense rubber resources of the Kongo basin and make them available for the European market has met with the complete approval of the Kongo government, which is prepared to grant very profitable concessions for that purpose. The newly-established rubber market in Antwerp has supplied an actual want and has opened very actively, and the imports from Kongo have been considerable.

* * *

THE German Rubber and Gutta-Percha Manufacturing Co. (formerly Volff & Schlüte) of Berlin, have declared a dividend of 4 per cent. on their capital of \$350,000. The company had a good business during all of last year, and during the latter half their factories had to be worked over time. In spite of their good business the dividend is no higher than for previous years, owing to higher prices for raw materials and lower prices for manufactured goods.

* * *

THE Voigt & Winde Rubber Manufacturing Co. (Berlin) declared a dividend of 8 per cent., the same as last year. The company was organized in 1873. The present capital stock amounts to \$250,000. The average prices of crude rubber, says the report of the company, were from 8 to 10 per cent. higher than the year before, yet the intense competition made a corresponding increase in prices of manufactured goods impossible.

* * *

RESPECTING Bolivian rubber, the *India Rubber Journal*, in its review of the British rubber trade for 1893, says that from time to time it has been in special request, and that good sales of it have resulted at prices $\frac{1}{2}d.$ @ $1d.$ over those ruling for fine Pará. Shipments of Peruvian rubber have shown some increase, and have met with a ready sale.

* * *

THE North German Rubber and Gutta-Percha Goods Factory (formerly Fonrobert & Reiman), of Berlin, with \$243,850 capital, has declared a dividend of 4 per cent.

* * *

THE United Hemp-Hose and Rubber Goods Factories, at a meeting of the directors at Gotha, declared a dividend of 10 per cent. on their capital of \$300,000.

* * *

MOSCOW'S exports of rubber goods in 1892 amounted to 122,440 pounds, valued at 110,045 rubles.

A FOREIGNER ON OUR RUBBER-SHOE TRADE.

THE report made to the Austrian government by Julius Loewenstein, of Vienna, one of the judges of exhibits in the Shoe and Leather Trades building at the World's Columbian Exposition, closes with a reference to the rubber-shoe industry in the United States. After referring to the United States Rubber Co. and the various concerns included within that, he writes:

"American rubber goods possess much positive value and a corresponding degree of originality. While they are not as durable as the rubbers made in St. Petersburg, they are lighter and more graceful in outline. New styles of lasts, new forms, and new details of ornamentation are being brought out every year.

"The richest corporation in America engaged in the manufacture of rubber footwear is the Boston Rubber Shoe Co. This company has preserved its identity up to the present time and has declined to join the combination spoken of. The man who controls the destinies of the Boston Rubber Shoe Co., Mr. E. S. Converse, is worth several millions of dollars and is well known in Europe, where he is a frequent visitor. The Boston Rubber Shoe Co. sells its goods throughout America and also has customers in London and Paris. One of their specialties, called a 'storm rubber,' would, I think, find a ready sale in Austria. A gentleman with whom I conversed in Boston informed me that the Boston Rubber Shoe Co. had decided to use lasts made of aluminum in the manufacture of rubber boots. These new lasts, it is said, do not lose their shape, are light and durable, and more economical.

"Only men of ability and good business training can succeed in the manufacture of rubber footwear in America. This fact explains why there are so few companies and why the combination was considered necessary. The rubber companies are paying more attention to foreign trade every year and are slowly but surely gaining ground."

"FIRSTS" AND "SECONDS" IN RUBBER.

IS it better to handle firsts or seconds in rubber goods? This is a very hard question to answer. I have handled boots and shoes for nearly ten years, and I find the answer to this question depends a great deal on what kind of trade a firm has. My opinion is that the average firm should carry both grades. In the first place nearly every dealer has a class of customers who demand a good article, and who are willing to pay a good price for it. I believe in giving that class the best article to be obtained, even if you have to sell at a small profit. For these customers you must carry the first quality. Some dealers who carry seconds only will sell them for firsts, but this will not do. It is a detriment to the manufacturers as well as to the retailers.

I hear the question asked frequently: "Why do manufacturers not make rubbers as good as they did three or four years ago?" Now my belief is that those people have had second-quality rubbers sold them for first-quality price. I believe that is the reason why it is hard to sell first quality

rubbers to those same people. The customers say at once that there is no difference in rubbers, because the seconds which they have previously bought as *firsts* are no better than the seconds they previously may have bought at a cheaper price. I believe every dealer should sell rubber goods as they are, and that if they would do so they would have less trouble with their customers and would be ahead in the end.

Next there is always a class of people who are looking for something cheap. Therefore the dealer should have a few second-, and even third-quality rubbers on hand. These should be sold as inferior qualities, however. The dealer should be honest, and tell the customer the difference, then try and sell the firsts. Even if you have to sell these best-quality rubbers at a little less profit it will pay in the end. If, however, the customers insist on buying seconds, sell them and tell them just what they are.

For instance let us take two brands, the Excelsior Boston and Diamond Goodyear. These two brands can be sold for first quality goods because they have part of a good brand stamped on the goods. There are dealers who buy these brands of goods and sell them for firsts. That is why it is so hard to sell a good rubber. You see that these retailers have no one to blame but themselves. Were they to sell goods as they are and let manufacturers mark as "first quality" the best article which can be made, and mark the seconds, "second quality" and I think we will have very little trouble in selling rubber goods.—C. H. Deppe (Minneapolis) in the "Boot and Shoe Recorder."

STATISTICAL BREVITIES.

THE governor of British Guiana, at Georgetown, says in his report to the crown, dated November 1, 1893: "Most of the smaller industries show a falling off, due probably, as in the case of sugar, to scarcity of labor. The notable exception is the collection of Balata gum, the export of which has doubled, being 237,405 pounds against 116,337 pounds from the previous year." Of this output the exports to the United States amounted to 199,278 pounds, valued at \$2380.80, or 12 cents per pound.

DETAILS of the export of Brazilian rubber from other ports than Pará continue to be difficult of access. It appears, however, that they continue to be on the increase, but of course not with the effect of encroaching upon the preëminence of Pará in this trade. In a report on the trade of Bahia, the British consul, E. Nicolini, notes the following growth in the shipments of rubber from that port:

YEAR.	Packages.	Value.
1890	1,193	£3,184
1891	2,412	7,638

A report submitted by the British legation at Rio de Janeiro mentions incidentally that "a small amount of India-rubber is exported from the state of Matto Grosso by the river Parana, chiefly to England." This is an important stream whose waters, uniting with those of the lesser rivers Paraguay and Uruguay, form the estuary of the Plata.

SWITZERLAND imported during 1892, 494,340 pounds of crude rubber, valued at 2,030,505 francs, and exported 488,620 pounds of rubber-manufactures, valued at 2,510,105 francs. Of the rubber imported 50 per cent. came from Germany.

A USE FOR RUBBER IN SAVING VESSELS.

THE New York *Herald* publishes a contribution on the subject of communication between stranded vessels and the shore. The writer does not favor the use of cannon for the reason that, when the sea is so bad that the lifeboat cannot be used, it would be impossible to work the cannon on board the vessel (unless a very large one) on account of the sea breaking over her.

He favors a life float and gives his idea as to shape and how it could be made successful in establishing communication with the shore. "It should be made the shape of a mushroom anchor, or, to be better understood, the shape of an umbrella, so the wind could catch it and drive it toward the shore, as in most cases, when the cannon on shore fails to reach the vessel, the wind is direct or quartering on shore. Have a small, strong line, from three to five hundred fathoms, on a reel which could be used from any part of the vessel's rigging; make one end of the line fast to the handle part of the float, which would keep the umbrella part ahead in such a manner that the wind would drive it toward the shore, so that it could be reached in this way. The cannon on shore could be shot across the float-line, the shore line having small steel hooks attached to it near the end, which would act as a grapple attaching itself to the float line which could then be drawn to shore. Then, to keep the float-line from sinking, have three or four small rubber balls, about the size of footballs, with snap hooks which could be hooked to the float-line, the float-line having small becketts for the snap hooks, so they could be attached quickly as the line runs out. Have the becketts about seventy-five feet apart, which would float the end of the float line nearest the shore, making it more certain to be caught by the shore line."

THE USE OF RUBBER BELTS IN MINING.

THE manufacturers of the Frue vanner, illustrated on page 3 of the April INDIA RUBBER WORLD—Fraser & Chalmers, Chicago—have issued a 72 page catalogue describing the same, which contains facts indicating a very extensive use of rubber belts in ore-concentration in mining. There is printed a list of sales of Frue vanners to mines in fifteen American states, besides which shipments have been made to Canada, Manitoba, Australia, Argentine, Brazil, Chile, Costa Rica, Guiana, Honduras, Hungary, Mexico (54 machines), Peru, Nicaragua, Russia, Colombia, Venezuela, and South Africa (250 machines). As this is only one of several vanning-machines in the market, it will be seen that the consumption of rubber in this direction has become very important and also that American manufacturers of such machines are not lacking in enterprise in pushing their trade abroad.

HOW RUBBER CEMENT IS MADE.

THE manufacture of rubber cement is thus described in an English journal: The process is a simple one, Pará rubber being used, and benzine being the solvent, and, in order to secure the finest, lightest and cleanest cement possible, the outer skins of the rubber "hams" are taken off, and the inner part, after being stripped and separated into as many parts as possible, is soaked in benzine until it is very much softened and has increased its bulk about four times. This is then put into a large churn, run by power, and a little resin is added to increase the sticking quality; the whole is then stirred for a number of hours, more benzine being added from time to time,

until a homogeneous mass is obtained, after which it is barrelled and sent to the shoe-factories. For repairing purposes a cement is prepared by the addition of a little lampblack and a certain proportion of litharge for insuring its drying after it has been applied. Another form in which the unvulcanized gum is produced is that for various "packings," employed in places heated by steam, where the gum, after being put into place is slowly vulcanized and has certain life added to it by having missed the first process of vulcanization.

UTAH MINERAL RUBBER.

THE American Asphalt Co. have about completed plans for manufacturing various articles out of the Utah elaterite, or mineral rubber, in competition with vulcanite productions of the east. Premises on Wewatta street, Denver, have about been leased, and by July, when the snow goes off the western range, the company will be ready to supply elaterite in any quantity. Elaterite is without elasticity, but is flexible enough to displace rubber combs, brush-backs, telephone-receivers, electric buttons, and other devices that enter into the commercial and domestic life of the nation. The company will employ about twenty hands at the inception of its enterprise, and will increase the number as business develops. Elaterite can be delivered in New York for \$30 a ton in competition with caoutchouc at 80 cents a pound. The American Asphalt Co. control 300,000 acres formerly owned by the Uintah Indians. A road seventeen miles in length will be built this spring, and then the company will begin shipping its raw material from Kyune station on the Rio Grande Western. The headquarters of the company are situated in Denver and the business is directed by William A. Perry.—*Rocky Mountain News* (Denver).

RUBBER GOODS AND "RECIPROCITY."

IN the following table is shown a comparison of the exports of rubber goods from the United States to the countries with which reciprocal commercial agreements are in force under section 3 of the McKinley bill, for the years 1889 and 1893. There is no means of knowing how far the increase in exports has been due to the lower tariffs now force in the importing countries and how far to increased efforts on our own part to effect sales:

COUNTRIES.	1889.	1893.
Guatemala.....	\$7,560	\$8,409
Honduras.....	10,491	2,936
Nicaragua.....	3,145	2,304
Salvador.....	1,943	3,025
British West Indies.....	5,360	5,978
Santo Domingo.....	811	5,358
Cuba.....	27,804	42,879
Puerto Rico.....	2,704	2,241
Brazil.....	7,721	20,427
British Guiana.....	95	37
Colombia.....	15,833	12,201
Venezuela.....	8,147	5,750
Hayti.....	804	6,940
Total.....	\$92,418	\$118,485

Rubber shoes are not specified with regard to other countries than Brazil. The exports to that country were 343 pairs in 1889 and 344 in 1893, or a gain of only 1 pair under the reciprocal arrangement.

RIGA imported 26,480 pounds of crude rubber in 1892, of the value of 39,720 rubles, about 40 per cent. coming from Germany. The exports of rubber-manufactures amounted to 372,160 pounds, valued at 279,120 rubles.

RUBBER-CULTURE FOR COLOMBIA.

RUBBER-CULTURE in Colombia forms in part the subject of a report to the British foreign-office, submitted to parliament in March last. The report is in the shape of a communication from the British consul at Bogota, G. Jenner, enclosing notes made by R. Thomson, formerly superintendent of the Jamaica botanical gardens, who was commissioned last year by the Colombian minister of public works to study the agricultural capabilities of the districts surrounding the mountain range known as the Sierra Nevada de Santa Marta, in the department of Magdalena, of which the seaport town of Santa Marta is the capital.

The district specifically described is that lying between the towns of Rio Hacha and Dibulla (some thirty miles apart) on the coast of the Caribbean sea, and extending back from the sea to the mountains. The name Barranco has been given to a tract in this district, embracing 26,000 acres and bounded for nine miles by the Enea, a small navigable river. It is described as suitable for the cultivation of cacao (from which chocolate is produced), bananas, and India-rubber. What is said in relation to these products applies, however, to other sections of the country.

Cacao is already grown in Colombia to an important extent for export. The cacao-tree demands shade, and heretofore this has been provided in the shape of trees yielding no profit. To some extent bananas have been planted with cacao for shade, but after the cacao-trees attain a considerable size the bananas cease to afford the needed protection. It is now suggested by Mr. Thomson that rubber-trees be planted, at the rate of about twenty per acre, for the purpose of yielding shade after the bananas are no longer serviceable. During the twelve years required for the growth of the rubber-trees to a productive age both the bananas and the cacao would be yielding a profit, and the rubber would begin to afford an income after the bananas had been retired.

It is also suggested that rubber-plantations without cacao might be practicable, with bananas on the same ground for the first twelve years, to yield an income before the rubber becomes productive. The rubber-tree of Ceará is suggested as particularly suited to the Sierra Nevada districts.

Costa Rica and Jamaica are now the principal sources whence the United States are now supplied with bananas, but their cultivation has been introduced in Colombia with most satisfactory results.

It may be mentioned that the cultivation of both cacao and bananas has been begun on a considerable scale in Nicaragua, and with satisfactory results. Several years ago India-rubber trees of the native species were planted for shading cacao-plantations, with the expectation that they would in time prove to be a source of profit.

GERMANS IN THE PERUVIAN RUBBER TRADE.

THE wholesale rubber trade of the old Inca capital Cuzco, and the department of the same name, is almost entirely in the hands of foreign merchants, and is for the most part under the management of Arequipa firms, which have their branches in Cuzco. Cuzco lies somewhat aside from the great arteries of communication. There is a branch line of the Mollendo-Puno railroad, which, however, goes only as far as Sicuani, from which place there yet remains a three or four days' journey with mules to Cuzco. An extension of the railway to Cuzco is now being projected. The communication with the

coast is through the medium of Arequipa, either by mules to Sicuani, then by rail to Arequipa and thence by rail again to Mollendo—altogether a journey of six or seven days, or, direct by mules to Arequipa, a journey of twelve days. This route was almost exclusively used while the railroad extended no farther than Santa Rosa, but now it is almost abandoned. The extension of the telegraph line to Cuzco, within the last two years, has done the rubber trade a great service. The difficulties of communication may be the real cause of the slow commercial development of Cuzco. Up to a few years ago, no large traders were found there; the small traders were obliged to procure for themselves then small quantities of goods from Arequipa. But now there are a number of foreign firms, which do a large and regular importing business from year to year. At first England was the leading importer, but now Germany ranks with her. Two-thirds of the imports are from England and Germany, while France, Italy, the United States, and the rest of the commercial countries, divide the remaining third among themselves. Rubber exists in the valleys on the Brazilian and Bolivian sides. A German firm has already acquired the right in Arequipa to exploit a large territory in the fertile Paucartambo valley, east of Cuzco. Work is already in progress for the establishment and improvement of means of making the exploitation easier. The natives have thus far not shown any pronounced hostility to the expeditions. The district referred to is exceedingly fertile and admirably adapted to all kinds of plantations.

NICARAGUAN RUBBER PRODUCTION.

BULLETIN No. 51, of the Bureau of the American Republics, is devoted to Nicaragua, of which country is given a map on a good-sized scale. The references to India-rubber are compiled from sources not new to INDIA RUBBER WORLD readers—especially from the special consular reports on India-rubber of 1890. The following figures may be quoted, however, as showing in detail the exportation of crude rubber (in pounds), for periods from July 1 to June 30:

EXPORTS.	1890-91.	1891-92.
<i>From Corinto:</i>		
To United States.....	61,502	55,251
<i>From San Juan Del Sur:</i>		
To United States.....	6,069	169
To Germany.....	1,350	.....
To England.....	456	780
To France.....	709	.....
<i>From Cabo Gracias a Dios:</i>		
To United States.....	148,554	171,155
To other countries.....	5,460	1,088
<i>From Grey Town:</i>		
To United States.....	292,965	300,520
To England.....	10,504	5,515
To France.....	460	2,760
Total.....	528,029	537,238

This showing does not take into account the shipments from Bluefields, which amounted, in the six months ending September 1, 1892, to 184,335 pounds. It is customary to estimate the movement from this port at about one-third the product of the country, so that the total for Nicaragua may be estimated at not far from 800,000 pounds per year.

Bluefields is situated on the Musquito coast, which is now a subject of international complications.

WHAT HOLDS IT ON?

THAT'S THE MYSTERY ABOUT THIS

INVISIBLE SELF-ACTING

Until you examine it—
and then—it's SO simple.

YOU THINK IT
WILL SLIP OFF—
ALL OTHERS DO—but the

“INVISIBLE,”—

Why, it CAN'T—it isn't
made that way.

A Little Like this —

And a Little Patented
Skill, and the

Invisible Self-Acting—HOLDS.

A dressy sole protector—from mud and dampness.

Manufactured only by the —

BOSTON RUBBER SHOE COMPANY,

Because they know how.

Mention the India Rubber World when you write

NEW GOODS AND SPECIALTIES.

A NEW waterproof suit that houses in the sporting-goods trade are selling largely, is a bicycle-suit made of cravenette. As far as appearance is concerned, this suit looks exactly like an ordinary tailor-made woolen suit. It is when the bicyclist runs through a shower, however, that he appreciates its special advantages, for it is thoroughly shower-proof, and at the same time is as comfortable as the lightest cloth suit could be. In other words, the cravenetting process does not close the pores of the cloth,—it simply makes the separate fibers thoroughly waterproof. Manufactured by the Beaver Manufacturing Co., No. 91 Richmond street, Boston, Mass.

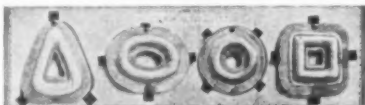
THE NORFOLK MACKINTOSH.



THE treasurer of the Norfolk Rubber Co. writes to THE INDIA RUBBER WORLD: "We have shown to your readers various types of ladies' garments that have seemed to suit them, but it occurs to us that we have spent so much time in exploiting feminine rain-shedders, that some of our customers may be unaware that we are making a very popular grade of men's goods. We therefore send you an electrotype of our Norfolk mackintosh, which has proved to be a very ready seller. This has a long 26-inch detachable cape, made either in heavy- or in light-weight goods, with cotton or woolen lining. The coat is a 53-inch garment, and can be worn either with or without the cape, and is a fine fitting and elegant garment." Manufactured by the Norfolk Rubber Co., Boston, Mass.

A PNEUMATIC CORN-PLASTER.

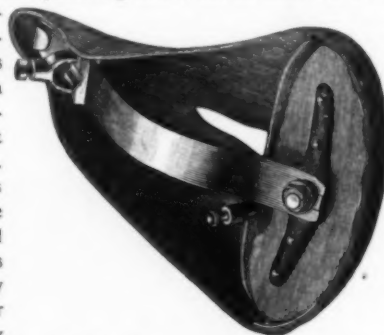
THE ancient corn-plaster, and in fact all corn-plasters up to this invention have been made of felt, which, after a few hours use, became matted, often making "the cure worse than the disease." The feature of the plaster illustrated herewith is that of its being an inflated rubber cushion, with a strengthening material combined therewith, rendering it capable of enduring hard usage, and at the same time being soft as silk. It is easily applied, and when on gives instant relief and a cure is rapidly performed. They are made in eight sizes and are put up in boxes containing respectively two dozen corn-plasters, and one dozen bunion-plasters. They are an invention of Mr. A. T. Holt of Akron, Ohio, and are sold by Smith Brothers of the



same place, with whom he is interested in the manufacture. The eastern agents are McCafferty & Holton, No. 165 William street, New York.

THE RICHMOND PNEUMATIC SADDLE.

THE pneumatic saddle has often been suggested and a variety of experiments made and patents granted, but all have not been the phenomenal successes that their producers predicted. As a matter of fact a good pneumatic saddle is a very difficult article to produce. The Richmond is without doubt the solution of this vexed problem. It looks like the ordinary leather saddle, nor has it the unwieldy



appearance or the extra weight of other types of pneumatics. In the Richmond a rubber air-cushion is placed under the leather seat at the base of the saddle. This is exactly where it is needed as it renders sagging impossible and does away with the constant jarring of the spine that so often troubles the devotees of the wheel.

It can be made in any style to suit the rider. Manufactured by the L. L. Richmond Manufacturing Co., Meadville, Pa.

THE "MIDGET" REPAIR OUTFIT.

AN outfit that will repair either hose-pipe or inner-tube tires is called the "Midget." It is light—weighing only two ounces—and compact, its length being but three inches. It contains emery paper for smoothing the surface, a needle for lacing the tire, a roll of pure gum for patching, a tube of rubber cement, a special lacing for the tire, and a roll of tire tape. The whole outfit is packed in a neatly nickeled case. Manufactured by the Elastic Tip Co., No. 370 Atlantic avenue, Boston, Mass.



"RUBY" PACKING.

"RUBY" packing, made by the New York Belting and Packing Co., Limited, No. 15 Park row, New York, is claimed to be generally useful and economical. It can be used over and over again. It will stand a continuous high degree of heat without becoming hardened, will not "squash" out, will not dissolve in contact with oils or ammonia, and will adapt itself readily to the uneven surfaces of the flanges. In brief, it "will make a

temporary or a permanent steam-, air- or water-joint, hot or cold,—a joint that will be tight and stay tight." This packing is also made into gaskets and rings, as well as gasket tubing, in all the regular shapes and sizes. The trade mark is the word "Ruby" in the double diamond. The company have just issued a little circular devoted to "Ruby" packing.

A NEW VENTILATED BOOT.

THE accompanying sketch shows a boot made without sectional compartments, but with an entire air-space surrounding it. As a practical bootmaker, and after a number of experiments, the inventor found this to be the best and cheapest form, costing about 10 cents more per pair for material and labor than an



ordinary boot. In a series of severe tests made during the past winter the results were very satisfactory. It is claimed to be desirable in preventing cold feet, while good ventilation is afforded. The figures shown in the cut relate (1) to the outer boot; (2) to the air-space; (3) to the inner boot; and (4) to the vent from the inner boot, through the air-space, to the top. This boot has been patented [No. 518,579] and will be found described in the abstract of new patents, on page 79 of this journal. The inventor is Erasmus Stahl, Naugatuck, Conn.

"SINEW" INSULATING COMPOUND.

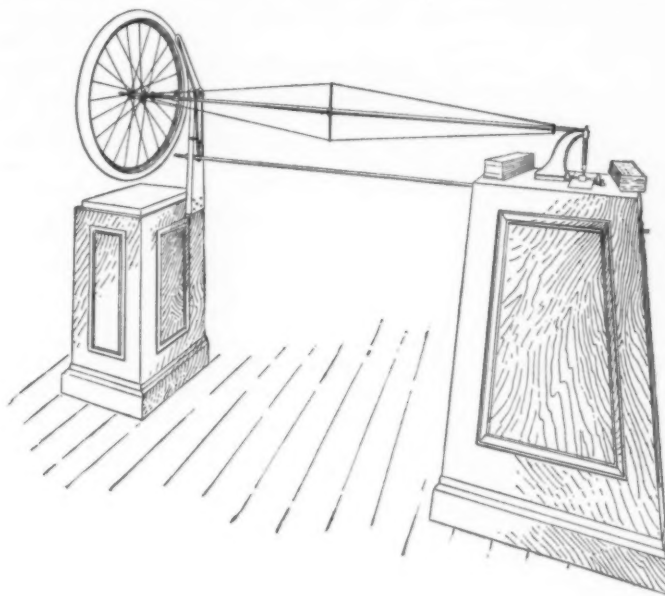
MANUFACTURERS of hard-rubber goods the country over have spent a good deal of money in purchasing insulating compounds for electrical railway work. The problem has not been an easy one to solve, for the reason that shellac and fiber compounds have done the work fairly well, and have been put on the market at an exceedingly low price. It, however, has been demonstrated that hard rubber properly prepared will outlast these compounds by years, and it was with this knowledge in their minds that the manufacturers of the "Sinew" have put their compound on the market. It is



claimed the material has an exceedingly high resistance and is already in use after some very severe tests. Manufactured by Spinney, Virtue & Co., Lynn, Mass.

THE VICTOR RESILIOMETER.

It has now been conceded that the more resilient a pneumatic tire is the easier it rides, the more speedy is the wheel, and the longer it lasts. Exactly how to prove the amount of this elasticity possessed by a tire was a conundrum until one of the prominent wheel companies invented a machine shown in the accompanying illustration. The machine itself is so simple as to need no detailed description. What it does is of more interest to buyers and users of tires. With a tire balanced at one



end and a pencil at the other, the number of times that a tire rebounds are made a matter of absolute record. That is, the more resilient the tire the greater number of rebounds, and the consequent increase in the number of curves that record these rebounds. This testing-machine was first brought to the attention of the public at the New York bicycle-show early in 1894, and attracted a great deal of attention. Since that time the makers have had it on exhibition in various bicycle depots, and are very proud of the record that their special make of tires has shown. Manufactured by the Overman Wheel Co., Chicopee Falls, Mass.

A WELL-MERITED PROMOTION.

RESPECTING the Mexican minister at Washington, whose interest in rubber-culture is well known to readers of THE INDIA RUBBER WORLD, the *Mexican Financier* says:

"Of the first-class missions at Washington which have not yet been raised to embassies are those of Russia and Mexico, and it is likely that, very soon, the Russian government will elevate its mission to that rank. It is desired at Washington that Mexico make its mission an embassy, in which case the legation here will be similarly honored. We believe that Mexico should transform its mission at Washington into an embassy, thus conferring the well-merited dignity of ambassador on that distinguished diplomat, Don Matias Romero, whose services to his country constitute a record of great usefulness and signal patriotism."

THE PNEUMATIC TIRE IN ENGLAND.

IN the *Fortnightly Review* (London) for May appeared an article by "Creton" on "Cycling and Cycles," in which it is estimated that the yearly output of bicycles in Great Britain alone "is not far short of half a million." At the two great cycle exhibitions of 1893 some 235 makers were represented, with exhibits of 2750 machines. Such figures suggest to the writer that it seems "not unreasonable to expect within a very few years cycling will have passed from the region of luxury to that of necessity." The remarks of this writer on pneumatic tires may prove of interest to manufacturers and others in America.

"Of all questions 'vexed' by the cyclist of to-day, the most vexed is that of tires. In the design of the machine itself some degree of finality has probably been now reached; but in the matter of tires we are confessedly only on the threshold, and must look for important and possibly startling developments in the future. At the risk of being tedious to the well-posted reader, we will touch for a moment on the 'history' of the tire question.

"As the solid India-rubber tire swept the old iron tire from the road in a moment in the seventies, so it was in its turn superseded by the 'pneumatic' and 'cushion' tires at the end of the eighties. The 'cushion' was an India-rubber tire very much larger than that hitherto in use, showing a diameter of about $1\frac{1}{4}$ inches, as against the older solid tire of $\frac{3}{4}$ inch, and had a small hollow air space or tube running through it. It was found that in use it gave an ease of traveling greatly superior to that of the ordinary type. But it had from the first to face a most formidable competitor in the so-called 'pneumatic' tire. This was an extension of the cushion principle whereby the thickness of the outside wall was reduced to a minimum, while the diameter of the tire was considerably increased, and the air within it stored by a force pump at a pressure of some 40 pounds on the square inch. There was a sharp contest between the 'cushion' and the 'pneumatic' extending over a whole riding season, but the issue was never really in doubt, and in the end the success of the pneumatic was assured. It is true that the invention was put upon the market in an absurdly experimental and immature condition, laboring under almost every conceivable defect, but the general principle was too good to be denied. It has been infinitely improved since its early days, and continues improving, like every other bicycling appliance, at a vast outlay of money and long-suffering on the part of the bicycling public.

"The pneumatic principle is now so well known that it will scarcely be necessary to explain it here. At the present day it generally takes the shape of an inner tube of soft and fine India-rubber containing air at a considerable pressure, kept in place by an outer covering of rubber-faced canvas attached to the rim of the wheel. The air forms a cushion of wonderful compressibility and resiliency, which carries the rider easily over all those minor inequalities of a road, unappreciable by an ordinary observer, which used to rack and weary the bicyclist. It is, moreover, a scientifically correct principle, for the work that is done in compressing the air cushion in front of the point of contact with the ground, is given back in large measure by its extreme resiliency, which makes the cushion resume its normal position *instantly* after contact, and so help to push the machine forward.

"In the solid tire the work done in compressing the India-rubber was not given back, as, owing to the comparatively slow

expansion of India-rubber, the compressed portion of the tire had passed the point of contact before it resumed its normal condition. In spite of all its ridiculous early defects, the tire was an undoubted success from a bicycling, and still more from a commercial, point of view. Imitations have, of course, followed by legions, and descriptions and puffs of impossible tires are as common as eldorado prospectuses of tire companies based, too often, on ridiculous miscalculations, or on worthless or bogus patents. The tire 'boom' of 1893 will be remembered with mixed feelings by not a few too sanguine investors.

"Meanwhile improvement 'broadens slowly down,' and we must be thankful for it. The drawback of the pneumatic tire is its liability to puncture, when it becomes at once deflated and unridable. A thorn, a nail, a bit of sharp flint or glass, may do the mischief, and, although a rider may travel a thousand or two thousand miles without puncture in one season, he may, in another, under the same conditions, puncture a dozen times, and suffer a vast amount of vexation. The philosophy of puncture is not easily understood; a road bristling with new flints may be traversed unscathed, and a thorn lurking invisible, may upset all calculations on a path like a billiard table.

"The principle of the pneumatic tire is now almost universally accepted, and the point in its physiology to which the attention of would be inventors is now more particularly directed, is the securing of accessibility to the inner tube in case of repair being needed. Most purchasers of pneumatically-tired bicycles in the early days will have a very vivid recollection of a little pamphlet presented to them at purchase, showing how repairs were to be effected. There were some pictures giving sections of the tire, and quasi-anatomical diagrams of bandages for its patching, naively stating that an ordinary bicyclist could carry out the necessary repair of a puncture on the roadside in twenty minutes. A very short experience sufficed to convince the ordinary bicyclist, however, that, so far from repair being made in twenty minutes, it could not be made at all on the roadside, and that in case of a puncture the only prudent course was to make at once for a railway station and take the train to the nearest repairing depot. This practical impossibility of repair was a most serious drawback, and tended to thoroughly disgust a rider, who was unfortunate enough to 'puncture' with the pneumatic system. Our business is not that of prophecy; the fittest tire will most certainly survive, but we shall not attempt to predict which it will be, nor do more than hint at the countless army now ranged before a purchaser, the hooked tires, the buttoned tires, the laced tires, the wired tires, the tires kept in place by inflation, the single tube tires and what not.

"There are no less than 101 of them mentioned in an exhaustive chapter on that subject in the *Cyclists' Year-Book*. But the parent company who launched the tire originally on the market keep immeasurably ahead of the rest. The name of Mr. J. B. Dunlop, of Belfast, its inventor, deserves a grateful mention, and the material of the Pneumatic Tire Co. of Dublin, is, to use a mild bull, a household word on the road. Of pneumatic tires now running it is computed that nearly ninety per cent. are Dunlops; that is, for one tire sold of all the other hundred patterns put together, there are sold nine Dunlops. The experience of the Stock Exchange is a sound corollary to that of the road, and a glance at the comparative values of 'Tire' shares emphatically confirms the verdict of the cycling public."

UNDERGROUND TELEGRAPH CABLES IN WEST AFRICA.

WE have received from the India Rubber, Gutta Percha, and Telegraph Works Co. (London) a most interesting report on certain repairs to some underground telegraph cables in West Africa. The report, written by Mr. Charles Bright, of the company's staff, is a book of 108 pages with various maps, charts, drawings, and tables, and is printed privately by the company in accordance with its usual custom of thus putting on record the logs of the cable expeditions sent out by it. To any one interested in the work of laying and maintaining submarine cables it is an extremely interesting recital of an arduous piece of work, carried out under the difficult conditions incident to engineering operations in a tropical climate.

The cables which Mr. Bright, accompanied by two cable hands and a jointer, was sent to repair are two lines laid down across the Cape Verd peninsula in Senegal, to connect two submarine cable landings distant about seven nautical miles apart. The landing to the northward is at a place called Yof and here terminates the cable from St. Louis de Senegal. The landing to the southward is at the French settlement of Dakar, from which point part two submarine cables—one a short one to the little island of Goree, the other a longer one to the English settlement of Bathurst, further down the coast. The Yof-Dakar land lines, then, put St. Louis in direct communication with Dakar and were put down across the peninsula of Cape Verd to save laying a considerably greater length of cable round it.

It is the usual plan in building a line to connect the point at which a submarine cable is landed with the operating station, to bury cable of the regular deep-sea type in a trench, and, as a general rule, this answers fairly well. Difficulties arise in very dry soil through the Gutta-percha becoming cracked and the joints in such land lines are often the cause of trouble because the cables are rarely put down with the assistance of an expert jointer. A further source of defects is the practice of using for these land lines cable which has been picked up in repairing some deep-sea section and which has consequently been severely strained.

In his investigation of the Yof-Dakar lines Mr. Bright found that he had all these evils to contend with and others besides. The cables were originally put down in 1885, duplicate lines being buried, as is always the rule, to prevent couple interruption of communication in the event of one becoming unserviceable. A year after the laying down of the lines they required repairs and twice again before Mr. Bright's expedition,—once in 1889 and once in 1891. Two of the gentlemen in charge of these operations died shortly after completing them, and, as Mr. Bright feelingly observes, "the proportion of deaths amongst those who have been engaged in the repairing of these lines appears to have been abnormally high."

Certainly Mr. Bright showed great powers of resistance in not succumbing himself, if not to the climate, to sheer despair. He found that the lines had been laid down "in a particularly slovenly, hurried and unsystematic manner, suggestive of an entire absence of any care or engineering skill." He found a continuous succession of kinks, the sheathing wires bird-caged in many places, the core crumbled to pieces, and the conductor exposed and, in some instances, touching the sheathing wires. Both lines were entirely broken down, each was seven miles long, and he only had a mile-and-a-half of new cable to make repairs with. He had to cut out 32 joints from the two lines

and of course to make 32 new ones. The work occupied about five weeks and was interrupted several times by slight attacks of fever.

The behavior of the cables from an insulation point of view is of course the feature of most interest to readers of THE INDIA RUBBER WORLD. Their behavior could not have been worse, although it was only what might have been expected. The route of the lines was for the most part in dry, sandy soil, in which the cables were very unevenly buried; they also passed across a marsh where they were subjected alternately to conditions of dryness and moisture—"circumstances worse than which," as Mr. Bright says, "could hardly be imagined." The joints, instead of being protected by proper workmanlike splices in the sheathing wires, were placed in iron boxes inside which the sheathing wires were bent back on themselves at each side of the joint. The condition of the joints is thus described: "The joint itself was, as a rule, in fairly good condition; the exposed core on either side of it was always found in a completely perished state, the Gutta-percha gradually dropping off in a white chalky form (looking at first sight more like India-rubber) after having rotted away to 'needle-points.'"

India-rubber insulation seems to have fared no better than Gutta-percha under the adverse conditions to which the Yof-Dakar lines are subjected. Hear the reports: "Both the lines across Marigot Marsh are insulated with India-rubber, and their general appearance clearly indicated extreme deterioration in insulation, for whenever the cable was picked up and opened out the rubber was found to be in a perfectly pulpy state, not unlike putty. The appearance of the core was such as would suggest that it had not been sufficiently 'cured' or vulcanized in manufacture, with the effect of causing its condition to be entirely changed under a high temperature; for if properly vulcanized India-rubber should naturally stand alterations of temperature better than Gutta-percha."

We cannot follow Mr. Bright through the many interesting details of his report, which is compiled in the form of a narrative of travel and deals with every feature of his stay in Senegal. The only conclusions to be drawn from the scientific data given in it relative to the cables are that submarine cable, whether with Gutta-percha or India-rubber core, is a type entirely unsuitable to the situation. No known insulating material will last under such conditions as those to which the Yof-Dakar lines are exposed. What should undoubtedly be used is a lead-covered cable, either with Gutta-percha or vulcanized rubber core and it would probably be economy in the end if submarine-cable companies adopted a lead covered cable for their land lines in many places where they use ordinary submarine cable. Although the experience of the Yof-Dakar lines—four repairs in less than eight years—is unusually bad, it is the general rule for land lines built of submarine cable to lose their insulation very quickly. The reason why such cable is always used in preference to any regular underground cable, is, of course, that a supply of it is always on hand on a cable-ship and for many reasons it is the most convenient thing to put down. In summarizing his report, Mr. Bright himself suggests the use of a cable having the core protected with a brass tape, of a heavier armoring than that used for the deep-sea cable that is generally put on shore for land lines, of a steel tape armoring "or even a hermetically-sealed lead-covered cable." To our mind the last is decidedly the thing to use in the character of work treated by Mr. Bright.

TRADE AND PERSONAL NOTES.

THE copartnership formerly existing between William C. Betts and Francis H. Robinson, under the style of Betts & Robinson, brokers in India-rubber, at No. 51 Stone street, New York, has been dissolved by mutual consent. The retiring partners have taken positions as salesmen, representing George A. Alden & Co., of Boston, and the New York Commercial Co.

—The legislature of Rhode Island has passed an act authorizing the National India Rubber Co., at Bristol, to increase its capital stock from \$500,000 to \$1,500,000.

—The Lancashire Rubber Co., Limited, have been registered in England, with a capital of £70,000, to acquire the business of a rubber-manufactory now carried on by A. McDougall, at Holland street, Pendleton, Salford, and to acquire also certain letters patent relating to an improved process in waterproofing.

—At the office of the register of deeds at Racine, Wis., articles of incorporation have been filed for the Burlington Waterproof Fabric Co., of Burlington, with \$15,000 capital.

—John Herbert Corey, who made so many friends at the World's Fair, where he was for a good while in charge of the exhibit of the Woonsocket Rubber Co., has been in charge of the display of footwear at the Midwinter Fair in California.

—The Boston Rubber Shoe Co., through their "sole consignee" in London, A. J. Gordon, have a stand at the Shoe and Leather Fair held at the Agricultural Hall, Islington, London. Their exhibit is described as being tastefully displayed and comprising about 300 distinct lines of rubber goods manufactured by the company.

—The executive committee of the board of directors of the United States Rubber Co. consists this year of Joseph Banigan, Robert D. Evans, Charles R. Flint, Samuel P. Colt, George A. Lewis, Henry L. Hotchkiss, and Mahlon C. Martin.

—The Woonsocket Rubber Co. are reported to have received a cable order for 200,000 pairs of rubbers of standard make from Denmark.

—The L. C. Smith Tire Co. have been organized at Syracuse, N. Y., with an authorized capital of \$1,000,000, to manufacture a detachable tire for wooden rims. The new tire is to be known as the "Smith," the head of the company, Lyman C. Smith, being well-known in connection with the Smith Premier Typewriter Co., and the L. C. Smith gun. The other members of the concern are Monroe C. Smith and H. W. Smith. The rim is described as small, staunch, and handsome, and the tire can be instantly detached or replaced.

—The Lawrence (Mass.) *Enterprise* devotes a full page to the Lawrence Rubber Co., with a half-tone portrait of Manager Isaac A. Crocker, and a good view of the company's building, No. 455 Essex street.

—The plant of the Elastic Product Co., at Savannah, Ga., was burned recently, at a loss estimated at \$5000, without insurance. This factory was established by John G. Carter, whose experiments with a cottonseed-oil substitute for India-rubber have been described in this journal, particularly in the issue for September 15, 1893.

—The new mixing-roll of the Automatic Rubber Mixer Co. (Boston) is meeting with instant and deserved appreciation. Several large mills have already placed orders for them.

—The Quaker City Rubber Co. (Charles A. Daniel, proprietor) have changed their location to a larger and better adapted warehouse, four doors above their former well-known stand, on Market street, Philadelphia.

—C. J. Bailey, of Boston, has returned from a business trip through the west. He found the call for his specialties as good as ever, and booked many very satisfactory orders.

—Mr. A. Meyer, of the firm of Reimers & Meyer (New York), has sailed for Europe to be gone a month or six weeks on a brief business trip.

—The recent rains throughout the country, and especially in the eastern part, have had a very healthy effect on the clothing trade, which was badly in need of some stimulant. The frequent downpours in Boston, New York, and Philadelphia, though badly hurting the hose trade, was greatly appreciated by those dealers who have carried-over stocks of mackintoshes and rubber-surface clothing. There was quite a little jobbing demand from New York state and Pennsylvania and drummers from the mills, who happened to be in any of the above cities, found orders not so difficult to get as usual.

—Mr. William T. Janney, of the Enterprise Rubber Co., is just back from a most successful fishing trip in northern Maine.

—Prescott Brothers, of Boston, find that May of this year has shown them larger sales and more satisfactory results than the corresponding month for 1893.

—At a recent fire in Hartford, Conn., at Nos. 26-28 Asylum street, occupied in part by the Conant Rubber Co., the stock of that concern was damaged to an extent estimated at \$6000.

—The Eastern Rubber Manufacturing Co. (Trenton, N. J.) have been sued by the North British Rubber Co. (Edinburgh, Scotland) for the alleged infringement of a patent on a bicycle-tire. It is claimed by the plaintiff that the wheel and tire manufactured at Trenton were originally invented by William E. Bartlett, of Edinburgh, and patented by him in the United States.

—In the United States circuit court at Hartford, Conn., the suit of the Canfield Rubber Co. against the Goodyear's India Rubber Glove Manufacturing Co. has been ordered discontinued without cost to either party. This was done on the application of the defendants' counsel, with the consent of the plaintiff. The suit was on account of a Canfield patent.

—The courts have decided that the bankrupt Omaha Rubber Co. may prefer creditors. This decision affects claims amounting to \$40,000, and disappoints many claimants. The assets of the rubber company, at the time of their failure last year, are rated at some \$17,000. The Commercial Bank and the Goodyear Rubber Co., by the terms of the decision of the courts, become preferred creditors, while the other creditors will get practically nothing.

—The Newton Rubber Co. (Newton Upper Falls, Mass.) began late last month to run a night force, in order to keep pace with their orders.

—A verdict for \$75,899.16 has been awarded in the suit of the Butler Hard Rubber Co. against the East Jersey Water Co. and the City of Newark, N. J., growing out of the division of the water of the Pequannock river in supplying Newark with water. The rubber company had been awarded \$65,800 by a commission appointed to assess the damages, but the company was dissatisfied and the jury has increased the award.

—A. W. Smith, who formerly represented the Duck Brand Co., of Chicago, has opened an office and sample room in Medinah Temple, Chicago, and now represents Goodyear's Rubber Manufacturing Co., and the Goodyear India Rubber Glove Manufacturing Co., for Chicago and the west.

—The Bishop Gutta Percha Co. (New York) have recently made additions to their large cable- and wire-manufacturing plant in East Twenty-fifth street which will increase their factory capacity 50 per cent. A new brick building has been erected, adjoining the old building, in which are located the commodious offices and stock-rooms. Manager Henry A. Reed is comfortably installed in neatly-appointed quarters on the second floor. Electric power will be used in certain parts of the plant and an electric hoist, electric lights, and an interior telephone system are in service.

—The Royal Pneumatic Tire Co. were incorporated on May 1 under the laws of Maine, with an authorized capital of \$500,000, to manufacture and buy and sell bicycles and parts of the same. The incorporators and directors are Herman W. Ladd (president) and George E. Fowle, of Boston, and John J. Hart (treasurer), of Lowell, Mass. The amount of capital paid in to secure incorporation was three shares of \$5 each.

—Ed. Wertheim, sole agent in Chicago for Louis Wertheim (Frankfort o/M.), manufacturer of asbestos fire-proof supplies, advises THE INDIA RUBBER WORLD of his removal to larger quarters at Nos. 207-209 Lake street, where he will keep in future a stock of goods for immediate delivery. This is the result of the satisfactory development of the business and is expected to lead to still larger sales.

—J. Hurd Thompson, who was secretary and treasurer of the Omaha (Neb.) Rubber Co. during its existence, advises THE INDIA RUBBER WORLD that he has opened a brokerage office under the style of the Omaha Rubber Brokerage Co., at No. 306 South Twelfth street. He is carrying a stock of the Schieren Co.'s leather belting, and selling all kinds of mechanical goods, sundries, and rubber boots and shoes on commission.

—The Patapsco Rubber Co. (Baltimore), agents for the New York Belting and Packing Co., secured an order from the fire board of Baltimore, for 9000 feet of "Unique" hose.

—The assets of the Newport (R. I.) Elastic Fabric Co., which were for some time in the hands of receivers, and later in those of Charles Acton Ives, as assignee, were disposed of on May 31 at assignee's sale. The machinery and fixtures brought \$4036, the purchasers being the E. Read Goodridge Co., of Newport. The sale did not embrace twenty-six large looms, which were never a part of the company's assets, but belonged to the manufacturers. The latter had already sold fourteen of the looms to the Goodridge Co. According to the Newport Mercury, the books of the defunct company show a paid-up capital of over \$40,000, of which nothing remains except the sum represented by the assignee's sale. It is rumored that a new company will be organized for the manufacture of elastic fabrics in the same building.

—The works of the American Rubber Co., at Cambridgeport, Mass., were started up in all departments on May 31 with 1300 operatives. It is stated that during the shut-down improvements and repairs amounting to \$75,000 were made.

—The Meyer Rubber Co. are to establish an agency at St. Joseph, Mo., and another rubber company is expected to open a store there.

—The works of the Boston Rubber Co., at Franklin, Mass., were put in operation on full time on June 4. Nearly half the laboring population of the town depend upon these works for a living.

—The American Tool and Machine Co. (Boston) are well-known to the rubber-trade as having done some of the best work in the way of special tools that they have ever received. It will be a pleasure to the friends of this concern to know that Mr. Edward C. Huxley has been elected president of this company, his present office being No. 84 Kingston street, Boston.

—The charter of the Woonsocket Rubber Co. has been amended by the legislature of Rhode Island by increasing its capital to \$3,000,000.

—The Gossamer Rubber Co., at South Framingham, Mass., are again erecting drying tables for curing their goods. There was a time when they used some twenty-nine miles of these tables in their manufacturing, but of late years the artificial curing inside the buildings has been employed altogether.

RUBBER SALESMEN.

NEW YORK and Boston have been visited recently by many of the largest buyers in the country, and some very fair orders have been booked in both cities. Trade is however later this season than usual, and the majority of the orders are rather smaller than last season, there being a disposition on the part of the buyers to go slow and root deep for prices, in fact it has been generally remarked by salesmen that they have never known it so hard to make sales before. Buyers representing the following well known houses have all been East looking over samples, with a view to the fall purchases: Illinois Rubber Co. (Chicago), Boyd, Jones & Co. (Baltimore), Sanders Duck & Rubber Co. (St. Louis), Stephen, Ballard Rubber Co. (New York), Day Rubber Co. (St. Louis), Chesapeake Rubber Co. (Baltimore), Montague & Bunting (Norfolk, Va.), Latta & Mulconroy (Philadelphia), Patapsco Rubber Co. (Baltimore), and McDonnell, Payne & Co. (Baltimore.)

—E. I. Aldrich, of the Boston Rubber Co., has just returned from an extended trip west, in the interest of the "Bell Brand" boots and shoes, manufactured by his company.

—Manager T. N. Conrad, of the Patapsco Rubber Co. (Baltimore), stopped over in Trenton and New York, and met many of his old friends while en route to Boston.

—Silas H. Jenkins, representing the Hodgman Rubber Co. in the west, is home in New York after a successful trip to the Pacific slope.

—James D. Ferguson is on his regular trip west in the interest of the India Rubber Glove Co., getting his share of the orders.

—George H. Payne is in New York looking after the southern buyers from his territory. This is one of Mr. Payne's annual summer visits to the metropolis, and he is kept busy looking after the customers of McDonnell, Payne & Co.

—W. A. Walker, New York representative of J. Mandleberg & Co., Limited (Manchester, England), has recently returned from a trip to Canada. Mr. Walker reports trade only fair, and, like every one else in the clothing line, he is looking for better days.

—David R. Westervelt is over his regular trip for the Good-year Rubber Co. (New York), with whom he has been for many years.

—Samuel H. Congdon, long and well known in the rubber trade, and formerly of the jobbing rubber house of Janney & Congdon, Baltimore, has accepted a position with the New York Belting and Packing Co., Limited. Mr. Congdon has recently been in New England for his new connection, and is now in the west. Mr. Congdon and the late E. L. Janney, formed the copartnership of Janney & Congdon, which for years was prominent as a large rubber distributing-house throughout the south.

—W. E. Wysham, southern representative of the Hodgman Rubber Co. (New York), is spending his vacation at his former home, in Baltimore. Mr. Wysham is a great lover of base-ball, and has been enjoying the strong work of the "Orioles" in their native town.

—E. R. Burley, Chicago agent for the Boston Rubber Co., is in Boston for a short stay.

—William J. Owens, of Utica, N. Y., has accepted a position as salesman for the Enterprise Rubber Co. (Boston), and will cover New York state for them.

—C. E. Morse has accepted a position with the Norfolk Rubber Co. (Boston), taking the place of R. J. Ford.

—Thomas H. Dickinson, southern salesman for the Boston Woven Hose and Rubber Co., has arrived in Boston after a very successful eight-months' trip through the south.

INDIVIDUAL MENTION.

MR. WILLIS DARLING, selling-agent of the Boston Woven Hose and Rubber Co., has returned from a two-weeks' sojourn at his fishing camp at Moosehead Lake. Mr. Darling is half-owner in one of the best equipped and most beautiful fishing boxes in the northern lake country. It is called Camp Sunshine and is known as a lucky camp. The best day's catch this year was 174 pounds of trout.

—Mr. William B. Banigan, manager of the Marvel Rubber Co. (Providence), is a good all-round athlete. He is a crack bicycle-rider and can cover as many miles as any one that he is likely to encounter.

—Mr. C. H. Arnold, of the Boston office of Reimers & Meyer, is the happy father of a fine boy.

—Mr. Walter S. Ballou, selling-agent of the Woonsocket Rubber Co., was recently seen in New York, when he expressed a determination soon to visit "Bangor Pool" and attempt to outdo his former records at salmon-fishing.

—Mr. P. W. Pratt, of the Elastic Tip Co. (Boston), is in California and will probably remain there until late in the summer.

—Mr. Joseph Banigan was called from his business last month to serve the public for a few days in the capacity of grand juror. Another piece of news about Mr. Banigan is that he is about to build a handsome new residence on Angell street, Providence almost upon the site of his old residence, which is to be moved.

—Mr. Eugene F. Salisbury died in Chicago on April 23, at the age of forty-two. He had been in poor health several years, but whenever he was able to engage actively in business he was connected with his father in the firm of W. H. Salisbury & Co., dealers in rubber goods.

—It is stated that the Hon. E. S. Converse sent his check for \$500 to the mayor of Boston, to be used in aiding the sufferers by the great fire in that city last month.

—Mr. Lester Leland, assistant treasurer of the Boston Rubber Shoe Co., accompanied by Mrs. Leland (who was Miss Kittie Converse), sailed after the last issue of our journal for an extended European trip.

—A recently-published sketch of Mr. Walter S. Ballou, selling-agent of the Woonsocket Rubber Co., mentions that his father is still living, at an advanced age, on an estate near Woonsocket which has long been in the hands of the family. He was for many years an influential member of the state legislature.

—Mr. Henry E. Galloway, president of the Indianapolis Rubber Co., and vice-president of the Indiana Bicycle Co., died on May 25. He was born near Chicago in 1862.

—At Hartford, Conn., on May 4, Mr. A. Melgert Vanderpoel, assistant superintendent of the Hartford Rubber Works, an establishment connected with the Pope Manufacturing Co., was instantly killed by being run over by a horse car. He was twenty-seven years old and was to have been married soon.

TRADE PUBLICATIONS.

"WHAT Congress Has Done," is a neat booklet compiled by W. L. Sage & Co., agents for the Colchester Rubber Co., in

Boston. It is singularly well done from a literary and typographical standpoint. The body of the book does not show a single error in composition or punctuation, and its sweet and chastened brevity fills the reader with somnolent peace. It is just the thing for summer reading.

—The India-Rubber and Gutta-Percha Insulating Co. (Yonkers and New York), authorized manufacturers of Habirshaw wires and cables for electric lighting, electric railways, telephones, telegraphs, and mining uses, issue a new catalogue and price-list of their products, which is not only interesting with respect to the information contained, but is extremely convenient for use by reason of the system of indexing used in printing the margins of the pages. The catalogue is fully protected by copyright against any sort of use of its contents by other parties. The catalogue opens with the assertion that "pure India-rubber is admittedly the highest known insulation, and therefore it should be used in some form as a basis for covering of all line and underground wires at present in use." Special attention is called to the use by the United States government of the Habirshaw insulation for the wiring of its new cruisers, as a strong point in its favor. Interest is added to the catalogue by the introduction of a list of important installations in nearly all the leading cities, in which the Habirshaw goods have been used.

—"Graphite as a Lubricant" is the title of a pamphlet in which the substance named is scientifically and practically considered, particularly with regard to its value as an accessory for engineers and machinists. The publishers are the Joseph Dixon Crucible Co., of Jersey City, N. J. It contains much information of value with respect to graphite, and has been brought out in a second edition. It will be sent free of charge to any applicant.

—King & Goddard (Boston) send a new edition of their extensive catalogue of hose, hose-pipes, reels, lawn-sprinklers, etc., with illustrations of their goods, and a complete price-list. Special reference is made to the Bradley steel shelf-bracket, which they manufacture.

CATALOGUES RECEIVED.

The L. Candee & Co., New Haven, Conn.=Catalogue and Price-List of Rubber Boots and Shoes, Season of 1894-5. 72 p. [With illustrations of styles.]

The Mechanical Rubber Co. (successor to Cleveland Rubber Co.), Cleveland, Ohio.=Fire-Hose Catalogue. 19 p. [With illustrations of hose appliances.]

Elastic Tip Co., Boston, Mass.=Bicycle Catalogue and Price-List. 64 p. [With illustrations of a large variety of goods.]

Sage & Co., Boston, Mass.=A Few Pointers About Rubber. 16 p. [Devoted to the characteristics of the goods of the Colchester Rubber Co.]

Vulcanized Fibre Co., No 14 Dey street, New York=Catalogue and Price-list. 39 p.

The Delaware Hard Fibre Co., Wilmington, Del.=Catalogue of Hard Fibre. 22 p.

The Kartavert Manufacturing Co., Wilmington, Del.=Folder. [Description of hard and flexible Kartavert fiber.]

Fiberoid Manufacturing Co., Wilmington, Del.=Price-List of Hard and Flexible Fiberoid and Graphoid-Fibre. 12 p.

American Rubber Co., Boston.=Price-List of Rubber Boots and Shoes, 1894-95. 16 p. [To accompany their catalogue, which contains a full description of styles and sizes.]

The Beaver Manufacturing Co., Boston.=Cravenette Mackintoshes. 4 p. [Answers the question, "What is Cravenette?"]

Charles Macintosh & Co., Limited, Manchester and Coventry, England.=The "Macintosh" Detachable Pneumatic Tyre. 8 p. [Description, press notices, and testimonials.]

Woonsocket Rubber Co., Woonsocket, R. I.=Price-List of Rubber Boots and Shoes, 1894-95. 14 p.

NEW PUBLICATIONS.

"THE SHOE AND LEATHER REPORTER" ANNUAL FOR 1894. NEW. York: *Shoe and Leather Reporter*. [Cloth. 8vo. 773 p.]

THIS is a useful reference book for the shoe trade in general, including that department of it which is interested in the rubber-shoe trade. After a compendium of trade statistics, which seems to have been carefully compiled with a view to the needs of the trade, comes a "Directory of the manufacturers of, and dealers in, shoes, leather, hides, findings, furs, wool, harness, machinery, and all commodities pertaining to the shoe industry in the United States; also, names of leading houses in the trade in other parts of the world."

WHAT AN ENGINEER SHOULD KNOW ABOUT ELECTRICITY. BY Albert L. Clough, E. E. Also, the Rules and Requirements of the Underwriters' International Electric Association, for the Installation of Electric Light and Power. Boston: Mason Regulator Co. [Boards. 16mo. 108 p. 50 cents.]

THIS forms No. 4 of the convenient and useful "Mason Regulator Company Series" and doubtless will be found valuable alike to rubber-manufacturers and others who are interested in the installation and care of electric apparatus in their establishments.

ARGENTINE REPUBLIC. [BULLETIN NO. 67 OF THE BUREAU OF the American Republics.] Washington: 1894. [Paper. 8vo. 455 p., with map.]

THIS is a useful compend of information concerning a wonderfully, progressive and growing republic of which too little is known in the United States. Its export trade already amounts to more than \$100,000,000 a year. Its capital, Buenos Aires, has a population of 600,000 and manufactories that consume yearly \$50,000,000 worth of raw material. It is the testimony of Consul-General Baker, who represents the United States at Buenos Aires, that the people of that capital dress and live like those of the great English-speaking cities of the world, and that the same classes of merchandise are demanded there as in New York and London, or even Paris and Berlin. There are many other important towns in the republic. Evidently such a country should receive more attention from our rubber-manufacturers than heretofore. The exports of rubber goods from the United States to Argentine amounted last year to only \$3500, whereas England has exported to that country within a single year as much as \$150,000 worth of rubber products.

EXPORTERS' HANDBOOK OF MEXICO, COMPRISING A CAREFULLY Revised List of Bankers, Reliable Merchants, Professional Men, Landed Proprietors, etc., in the Republic, Besides Valuable Information to American Manufacturers Desiring to Cultivate Mexican Trade. Compiled [and sold] by Phillip G. Roeder, No 664 Cedar avenue, Cleveland, Ohio. [Price \$2.]

THE facts contained in this little volume were compiled during several years of travel in Mexico by Mr. Roeder, as a manufacturer's agent. The compiler writes to THE INDIA RUBBER WORLD that the Mexicans dread getting wet, and in the rainy season from May to September, rubber clothing is in great demand. As he says, the United States buy most of the crude rubber produced in Mexico, and we ought to sell them the most of the rubber goods they use. Mr. Roeder feels that the use of his book will be helpful in extending any line of trade in our neighboring republic.

A. MACKINTOSH figures among the men pulled in a speak-easy raid. They might have expected to have found him among wet goods.—*Philadelphia Ledger*.

THE new export taxes adopted in Mexico include a duty on Chicle of 2 cents per kilogram, net weight, or a little less than 1 cent per pound, in Mexican currency, in which the dollar is worth about 60 cents in United States currency.

To forestall trouble in the payment of wages, owing to similarity of names of employes, the Candee Rubber Co. (New Haven) have adopted a brass check system, each check bearing a number corresponding with a number given to the employé on the pay-roll.

THE pneumatic skate, illustrated and described in THE INDIA RUBBER WORLD of November 15, 1893, and in regard to which so many of our readers have expressed an interest, is to be manufactured by a company lately organized, with \$60,000 capital. The offices of the company are at 63, Temple row, Birmingham, England.

IN correspondence with THE INDIA RUBBER WORLD, M. B. Hirsh & Brother, manufacturers of waterproof bicyclers' clothing, Philadelphia, state that their product does not belong to the rubber trade. "Indeed," they write, "we are very anxious to correct the impression that our waterproofing goods have any resemblance to rubber fabrics or material."

REVIEW OF THE RUBBER MARKET.

SEVERAL things have combined to produce a decidedly better feeling in the trade than prevailed at the time of our last review. That there has been any substantial improvement cannot be said, but that "a change has come over the spirit" of rubber-men's talk is a fact. Reference to the quotations below will show that prices have remained firm. In addition to the general reason, repeatedly elaborated in this column, for this stubborn refusal of prices to yield in the face of a protracted depression, there have been certain special circumstances during the month to maintain and reinforce the steady influences. In the first the arrivals of Pará rubber, as the report below indicates, have been relatively small, owing merely to slow shipments. At present there is no steamer with a rubber cargo afloat, although one is to sail in a few days. This circumstance alone tends to make prices of fine and coarse Pará firmer. Another factor has been the starting up of the shoe factories, some of which are even running over time. Although the boot and shoe people do not appear as competitive buyers

in the market, and although they have a large stock of crude rubber on hand, yet the fact of their resumption of work has a healthy indirect effect on the trade. The boot and shoe people are the heaviest consumers of rubber, and the trade knows that every day's work means the consumption of a large quantity of crude material which has to be replaced. Where this new rubber comes from,—whether it is bought in Pará or here,—is of little consequence, the point being that it must come from somewhere and by so much lessen the stock waiting for demand. A third factor has been the prolonged and unusual visitation of rainy weather. The two or three weeks of rain all over the country have given the rubber, clothing people a kind of boom, for which much thankfulness is being expressed. The retailers were naturally the first to be favorably affected, but such is the interdependence of business that the little boom at once extended from retailers to jobbers, from jobbers to manufacturers, and from manufacturers to brokers and dealers in crude rubber. The result of these converging influences has

been a more hopeful feeling and a somewhat increased demand. The deliveries have averaged well, though the buying on the part of the manufacturers continues to be from hand-to-mouth.

Apart from the special circumstances affecting the rubber trade exclusively, there have been encouraging signs of improvement in the general industrial situation. To begin with there is now some reason for the hope that the new tariff bill will be in operation by August, and even apart from this the rates of duty on all important articles are virtually known now. The temper of the senate is well known; the reductions of duties will not be heavy, and hence those manufacturers who have been demanding a certain basis for operations have no longer any reason for postponing a resumption of work. Only the least enterprising and unduly cautious will prefer to wait for more definiteness or certainty as to prices. The active and progressive among the manufacturers already see their way clear to resumption of work. The uncertainty that has been hanging over industry for a period of nearly eight months is really at an end, at least so far as the tariff is concerned. As to other checks upon a business revival, they have not been serious and must rapidly lose their force. The rubber-men fully endorse the view taken in the review of last month with reference to the difference between a revival following a panic due to over-speculation, and the present revival, which follows a depression resulting from uncertainty simply. There is plenty of capital waiting for enterprise; there are men and opportunities; there are needs and an abundance of new projects. There will spring up a demand for goods in a very short time which will involve a demand for raw material, plant, machinery, and capital. It is hoped that the house of representatives, always more responsive to the popular will, realizes the need of settling the tariff controversy as speedily as possible, and will not attempt any serious changes in the bill to be reported from the senate. Such attempts would arrest the recovery of the business world and cripple the fall trade.

Jobbers report large orders for future delivery for boots and shoes from the west and northwest. It is the peculiarity of the boot and shoe trade that it is least dependent on tariff changes—from necessity, of course, rather than choice. This is the time for manufacturing this line of goods; this is the time for orders to agents as well. It is impossible for the boot and shoe people to wait for congress; they must take their chances.

The deliveries in Europe have been very fair. The business depression there is practically over, which fact reacts on the American rubber trade and helps to keep up prices.

On the whole the outlook is considerably brighter than it was last month. While nobody predicts a rise in the prices of rubber, there is no expectation of a decline, and manufacturers will soon commence to lay in stocks. They have exhausted their goods as well as their crude material.

In Africans, as in Pará and Centrals, the month has marked an improved demand.

The latest quotations in the New York market are:

Pará, fine, new ta....	65@66	Sierra Leone.....	20@38
Pará, fine, old.....	69@72	Benguela.....	43
Pará, coarse, new ta....	43@47	Kongo Ball.....	37@38
Pará, coarse, old.....	50@53	Cameroon Ball.....	34@36
Caucho (Peruvian) strip	43	Flake, Ord. and Lump....	24@25
Caucho (Peruvian) ball.	47	Acra Flake.....	14@15
Mangabeira, sheet.....	30@37½	Liberian Flake.....	21
Esmeralda, sausage....	46	Prime Pinky Madr.....	58@60
Guayaquil, strip.....	27@33	Madagascar, black.....	42
Nicaragua, scrap.....	43½	Borneo.....	26@40
Nicaragua, sheet.....	41½	Gutta-percha, fine grade..	1.30
Thimbles.....	35@36	Gutta-percha, medium....	1.00
Tongues.....	30@35	Gutta-percha, hard white.	85

The statistical position of Pará rubber in New York and elsewhere is as follows:

	Fine and medium.	Coarse.	Total.
Stock, April 30, 1894.....	1356	109	1465
Arrivals, May.....	244	92	336
Aggregating.....	1600	201	1801
Deliveries, May.....	433	120	553
Stock, May.....	1167	81	1248
Stock in England, May 31			1505
Deliveries in England, May.....			550
Pará receipts, May.....			810
Stock in Pará, May.....			465
World's supply, May 31.....			3883
[Excluding caucho.]			
Pará receipts, June-May.....			18,940
[Eleven months of crop year.]			

GOULD COMMERCIAL CO.'S STATISTICS.

IMPORTS FOR APRIL (BY TONS).

GRADES.	New York.	Boston.	Total.
Parás.....	650	..	650
Centrals.....	107	..	107
Africans.....	165	29	194
East Indian.....	40	..	40
Totals.....	962	29	991

IMPORTS FOR MAY.

Parás.....	407	8	415
Centrals.....	128	..	128
Africans.....	189	16	205
East Indian.....	15	..	15
Totals.....	742	24	766

AFRICAN RUBBER—LIVERPOOL.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Since our last report, we have little or no fluctuation to record in the prices of medium kinds generally. There has been a good day-to-day business doing, partly for Europe and partly for America. The prices of the best kinds are well maintained. The principal decline has been in the price of Benguela Niggers, which are now obtainable at 1/8¾ c. i. f., New York. To-day's quotations are as follows:

Soft Liberian.....	10¼ @ 10½d.
Soft Liberian (pasty).....	6d.
Hard Liberian.....	1/2
Accra, Saltpond and Cape Coast Biscuits of fair quality.....	1/9 @ 1/10
Accra Biscuits, best quality.....	1/10¾
Addah Niggers.....	1/7½ @ 1/8½
Prime selected Sierra Leone Niggers.....	1/5 @ 1/6
Extra prime ditto.....	2/
Grand Bassam and Assinee.....	1/5 @ 1/5½
Prime Gambia Niggers.....	2/1
Cameroon Clusters.....	1/5 @ 1/9
Large Cameroon or Batanga Ball.....	1/5
Best Kongo Ball.....	1/8¾
Gaboon Ball or second Kongo Ball.....	1/6¾ @ 1/7
Thimbles.....	1/5½
Flake.....	11d.
Lump Flake.....	11½d.
Prime Black Manoh Twists.....	2/ @ 2/1
Old Calabar.....	1/2½
Loanda Niggers.....	2/4 @ 2/6
Benguela Niggers c. i. f. New York.....	1/8¾ @ 1/9

The London market has also been steady, and the sales made include the following: Madagascar Niggers, 1/1¼ @ 1/5 according to quality; fine Mozambique Ball, 2/2½ @ 2/3¼; good, white, livery, Mozambique Ball at 1/9; pinky Madagascar, 2/4; Mozambique Spindles of low quality 1/2, and Black Madagascar 1/9.

We append a statement of Liverpool rubber statistics for the month of April.

WM. SYMINGTON & CO.

Liverpool, May 2, 1894.

LIVERPOOL RUBBER STATISTICS.

	Pará grades.	Africans.
Stocks, April 30.....	2,981,440	1,424,640
Arrivals during May.....	1,601,600	1,072,960
	4,583,040	2,497,600
Stocks, May 31.....	3,404,800	1,341,760
Deliveries during May.....	1,178,240	1,155,840
As against deliveries during April.....	1,440,320	898,240

The stock of Pará rubber May 31 consisted of:

	Fine.	Entre-fine.	Negroheads.	Total.
First hands.....	931	148	281	1,363 tons.
Second hands.....	117	10	30	157 "
Total.....	1,051	158	311	1,520 "

Stock of Ceará rubber on May 31, 214 bales; stock of Peruvian rubber, 84 tons.

IMPORTS FROM PARÁ.

THE imports in detail of rubber direct from Pará at the port of New York, since our last report, have been as follows, all quantities being expressed in pounds:

May 16.—By the steamer *Cearense*, from Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total
Sears & Co.....	28,700	400	6,100	40,400	75,600
Reimers & Meyer	15,400	1,100	28,600	20,800	65,900
New York Commercial Co.	33,230	3,900	25,100	1,300	63,500
Shipton Green.....	2,700	.....	400	49,600	52,700
Boston Rubber Shoe Co..	.....	.....	.....	25,600	25,600
Otto G. Mayer & Co.....	23,800	.....	2,300	.....	26,100
Lawrence Johnson & Co..	3,600	400	9,600	.....	13,600
G. Amsinck & Co.....	1,100	.....	.....	.....	.....
Total	108,000	5,800	72,100	137,700	324,100

Mould Work and Mould Work Alone

IS WHAT WE SEEK.

It is Our Specialty and we do it better, cheaper, quicker, than anyone else in the trade.

H. O. CANFIELD,

BRIDGEPORT,

Mention the India Rubber World when you write.

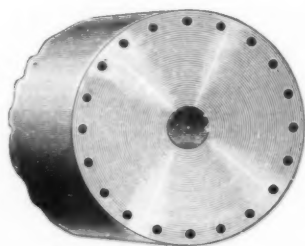
CONN.

COOLING ROLLS

FOR

Grinders, Mixing Mills and Calenders.

NEW STYLE.



New Style Roll cools from a blistering heat to a stone cold in four minutes. They run at more than twice the speed of the old rolls, and do more than twice the work. They can cool with water many degrees warmer than can the old style. They can cool as well in Summer as in Winter. They require but a small fraction of the water used in cooling the old style roll.

OLD STYLE.



AUTOMATIC RUBBER MIXER CO., 275 Devonshire St., Boston.

Mention the India Rubber World when you write.

June 2.—By the steamer *Gregory*, from Pará and Manáos:

New York Commercial Co.	73,500	12,300	30,300	4,400	130,400
Reimers & Meyer	65,000	15,500	61,000	16,600	149,900
Shipton Green	12,300	1,400	6,100	.....	19,800
Runbardt & Co.	9,600	5,200	.....	.....	14,800
Sears & Co.	700	300	600	.....	1,600
Lawrence Johnson & Co.	1,800	300	800	.....	2,900
Joseph Banigan	8,900	1,400	4,200	.....	14,500
Boston Rubber Shoe Co.	9,200	1,000	4,200	1,000	16,400
Total	181,900	37,300	107,200	22,000	347,500

June 3.—By the steamer *Paraense*, from Pará and Manáos:

Boston Rubber Shoe Co.	26,500	2,100	19,000	83,000	130,600
Joseph Banigan	26,600	4,200	9,000	7,100	47,500
Shipton Green	10,300	1,200	5,400	.....	16,900
Lawrence Johnson & Co.	9,600	2,800	.....	2,000	14,400
Reimers & Meyer	700	16,800	.....	34,700	52,200

OTHER NEW YORK ARRIVALS.

BELOW will be found in detail the imports at New York, during May, 1894, of India-rubber from Mexico, Central America, and South America, other than Pará grades; also, arrivals at New York of African and East Indian sorts:

CENTRALS.

MAY 1.—By the <i>Miranda</i> =Greytown:	POUNDS.
Eggers & Heinlein	1,500
A. S. Lascellos & Co.	275
A. P. Strout	4,400
Andrews & Co.	1,500
R. Mandell	280
Total	8,255

MAY 2.—By the *Yucatan*=Vera Cruz:

H. Marquardt & Co.	100
H. A. Forrest & Co.	200
Graham, Hinkley & Co.	200
Total	500

MAY 3.—By the *Newport*=Colon:

C. Hoidan & Van Sickle	4,547
F. Probst & Co.	2,748
Munoz & Esprella	3,680
Piza, Nephews & Co.	3,900
To Order	2,000
A. Santos & Co.	1,520
W. R. Grace & Co.	1,500
G. Pardo & Co.	505
Total	21,503

MAY 4.—By the *El Dorado*=New Orleans:

To Order	5,000
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MAY 5.—By the *County Down*=New Orleans:

H. Marquardt & Co.	100
F. Probst & Co.	200
Total	300

MAY 6.—By the *Alps*=Cartagena:

Ellinger Brothers	400
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MAY 9.—By the *Concho*=Vera Cruz:

Thebaud Brothers	100
H. A. Forrest & Co.	500
Total	600

MAY 9.—By the *John Wilson*=Bluefields:

W. H. Crossman & Brothers	10,350
Earle Brothers	4,500
Gillespie Bros.	744
Betts & Robinson	2,450
Hurlbut (transhipment)	2,300
Earle Brothers (for Hamburg)	2,600
Total	13,444

MAY 11.—By the *Columbia*=Colon, etc.:

W. R. Grace & Co.	13,047
J. M. Ceballos & Co.	13,734
G. Amsinck & Co.	7,358
A. Santos & Co.	8,578
Piza, Nephews & Co.	4,200
Plint & Co.	1,500
Baruch & Co.	1,090
C. Hoidan & Van Sickle	350
G. Pardo & Co.	505
F. Probst & Co.	468
Dumarest Bros.	310
To Order	103
Total	52,986

MAY 14.—By the *Alvina*=Cartagena:

Pim, Forwood & Co.	200
W. R. Grace & Co.	4,700
W. R. Grace & Co.	1,300

New York Commercial Co.	3,900	.....	3,600	1,200	8,700
Total	77,600	27,100	37,000	128,600	270,300

May Imports from Pará	926,300
April Imports	2,566,868
March Imports	2,177,400
February Imports	2,309,402
January Imports	3,750,000
December Imports	3,226,200
November Imports	1,416,000
October Imports	1,661,600

OTHER PARA ARRIVALS.

MAY 5.—By the steamer <i>Teutonic</i> , from Liverpool:	Reimers & Meyer	17,287
MAY 5.—By the steamer <i>Lucania</i> , from Liverpool:	Reimers & Meyer	22,761

A. N. Rotholz	400
Eggers & Heinlein	200
D. A. De Lima & Co.	200
Total	7,000

MAY 15.—By the *Knickerbocker*=New Orleans:

A. N. Rotholz	400
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MAY 17.—By the *Orizaba*=Vera Cruz:

H. Marquardt & Co.	300
Graham, Hinkley & Co.	500
Total	800

MAY 19.—By the *Benedick*=Vera Cruz:

To Order	300
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MAY 23.—By the *Yumuri*=Mexican ports:

Seeger & Guernsey	100
H. Marquardt & Co.	300
H. A. Forrest & Co.	200
J. Agostini	150
Louis Monjo & Co.	450
Thelle & Quack	150
Total	1,350

MAY 24.—By the *City of Pará*=Colon:

A. Santos & Co.	7,900
Piza, Nephews & Co.	3,912
J. M. Ceballos & Co.	3,700
Herz, Feltman & Co.	4,400
W. R. Grace & Co.	3,600
New York Commercial Co.	6,000
To Order	3,500
Headley & Co.	1,565
Munoz & Esprella	2,889
Jacob Balz	1,835
J. Aparicio & Co.	1,150
I. Brandon & Bros.	1,612
A. N. Rotholz	502
H. Marquardt & Co.	182
Total	42,597

MAY 26.—By the *Atina*=Cartagena:

W. R. Grace & Co.	5,000
Ellinger Bros	800
Runbardt & Co.	400
To Order	2,000
G. Amsinck & Co.	700
Thelle & Quack	600
Pim, Forwood & Co.	100
Total	9,900

MAY 29.—By the *Hudson*=New Orleans:

Earle Brothers	2,500
To Order	3,700
Total	6,200

MAY 30.—By the *Vigilante*=Vera Cruz:

H. Marquardt & Co.	150
Graham, Hinkley & Co.	100
J. Menendez & Co.	400
Total	650

MAY 31.—By the *Newport*=Panama:

H. Marquardt & Co.	400
I. Brandon & Bros.	900
To Order	1,300
F. Probst & Co.	180
Total	2,650
Total	174,905

AFRICANS.

	POUNDS.
MAY 5.—By the <i>Teutonic</i> =Liverpool :	
George A. Alden & Co	12,812
MAY 5.—By the <i>Rune</i> =Liverpool :	
George A. Alden & Co	3,947
MAY 5.—By the <i>Britannic</i> =Liverpool :	
W. A. Brown & Co	1,000
MAY 10.—By the <i>New York</i> =Southampton :	
W. A. Brown & Co.	11,200

MAY 10.—By the <i>Umbria</i> =Liverpool :	Reimers & Meyer.....	16,301
MAY 10.—By the <i>Cevic</i> =Liverpool :	W. A. Brown & Co.....	11,733
MAY 10.—By the <i>Vega</i> =Lisbon :	George A. Alden & Co.....	111,401
MAY 10.—By the <i>Vega</i> =Lisbon :	Reimers & Meyer.....	22,378
MAY 17.—By the <i>Russia</i> =Hamburg :	Earle Brothers.....	711
Reimers & Meyer.....		1,062
MAY 23.—By the <i>Donna Maria</i> =Lisbon :	George A. Alden & Co.....	120,490
United States Rubber Co.....		44,046
MAY 23.—By the <i>Moravia</i> =Hamburg :	George A. Alden & Co.....	2,684
MAY 23.—By the <i>Etruria</i> =Liverpool :	George A. Alden & Co.....	2,585
MAY 23.—By the <i>Arizona</i> =Liverpool :	Reimers & Meyer.....	1,440
MAY 23.—By the <i>Normandie</i> =Liverpool :	Henry Smythe.....	11,022
MAY 28.—By the <i>Teutonic</i> =Liverpool :	Reimers & Meyer.....	14,838
MAY 28.—By the <i>Dania</i> =Hamburg :	George A. Alden & Co.....	23,171
MAY 31.—By the <i>Bovic</i> =Liverpool :	George A. Alden & Co.....	9,246
Total		363,037

EAST INDIAN.

	POUNDS.
MAY 5.—By the <i>Queen</i> =London :	
Windmuller & Roelke	33,033
MAY 10.—By the <i>Greece</i> =London :	
Reimers & Meyer	3,991
MAY 17.—By the <i>Russia</i> =Hamburg :	
R. Soltan	11,631
MAY 31.—By the <i>Massachusetts</i> =London :	
Reimers & Meyer	17,341
Total	68,996

BOSTON ARRIVALS.

BOSTON ARRIVALS.		POUNDS.
MAY 8.—By the <i>Carlisle City</i> =London:		
George A. Alden & Co., Africans		1,700
MAY 13.—By the <i>Gallia</i> =Liverpool:		
George A. Alden & Co., Africans		4,760
MAY 18.—By the <i>Cambroman</i> =Liverpool:		
George A. Alden & Co., Africans		8,710
MAY 31.—By the <i>Milanese</i> =London:		
George A. Alden & Co., Africans		3,000

Total Boston Imports, May	21,820
Total for April	136,000
Total for March	111,250
Total for February	154,140
Total for January	58,600
Total for December	368,364
Total for November	78,078

NEW ORLEANS.

APRIL.	POUNDS.	VALUE.
From Nicaragua	38,485	\$11,626
From Colombia	431	132
Total	\$38,916	\$11,758

MAY.	POUNDS.	VALUE.
Nicaragua	5,977	\$2,111
Colombia	550	228
Total	6,527	\$2,339

RUBBER SUBSTITUTE.

IMPORTS AT NEW YORK.

EXPORTS AT NEW YORK.		POUNDS.
MAY 10.—By the <i>Cevic</i> =Liverpool :		
Mr. Liebmann		7,560
MAY 17.—By the <i>Tauris</i> =Liverpool :		
H. H. Smythe		2,072
Total For May. ..		9,632

